IBM Business Process Manager
Version 7.5.0

IBM Business Process Manager Advanced Installation Guide

IBM
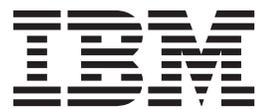
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Contents

Chapter 1. Roadmap: Installing and configuring IBM Business Process Manager Advanced

The IBM® Business Process Manager installer and configuration programs accommodate a variety of scenarios. This roadmap lists the sequence of tasks for installing and configuring the software for a stand-alone or network deployment scenario.

In general, installing the software means adding the product binaries from media or from a download site on to your system. In some instances, installing the software also configures the software for use.

Use the information in the roadmap as a supplement to the GUI and to build your understanding of the installation and configuration procedures for a particular scenario, from its high-level tasks to the associated procedural information.

The sections in the roadmap target specific installation and configuration scenarios. These scenarios represent ways to achieve either a stand-alone or network deployment environment. Each section includes a table listing the activities to perform, with links to the instructions and notes about the result of completing each activity.

The following scenarios are covered in the roadmap:

- Typical installation.

  The **Typical installation** scenario installs the software and configures a stand-alone profile. A Typical installation does not require you to create profiles separately using the Profile Management Tool or `manageprofiles` utility.

  The Typical installation option is the simplest and quickest method for installing and configuring the software.

  This scenario is ideal for getting full Business Process Manager features and functionality (for Express, Standard, or Advanced configurations) on to a single machine. See Installing IBM BPM Advanced using the **Typical** option for details.

- Custom installation, followed by profile creation of one or more stand-alone profiles.

  The **Custom installation** scenario also installs the software on to your system, but it provides you with more control over the features and functions that are installed. For a stand-alone server environment, create the stand-alone profiles after the installing the product binaries by using either the Profile Management Tool or `manageprofiles` command-line utility.

  See Installing IBM BPM Advanced using the **Custom installation** and configuring one or more stand-alone profiles.

- Custom installation, followed by profile creation of one or more deployment manager and custom (managed node) profiles.

  This installation and configuration scenario provides the capacity, scalability, and robustness that is generally required of a large-scale production environment. The type of configuration created using this scenario is known as a *network deployment configuration*, which is made up of a group of servers (known as clusters) that collaborate to provide workload balancing and failover. The servers are managed centrally, using a single administrative console known as the deployment manager.

  You can achieve a *standardized* network deployment configuration (based on topology pattern templates packaged with the software) or a *customized* network deployment configuration (one you create yourself, without the aid of templates).

  – A standardized network deployment configuration:

    The installer installs the software on to your system, and then you use the profile configuration programs (Profile Management Tool or `manageprofiles` command-line utility) to create and configure one or more deployment manager and custom (managed node) profiles and the

Deployment Environment wizard to create a network deployment configuration based on topology pattern templates packaged with the software. See Installing IBM BPM Advanced using the **Custom installation** and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment

– A customized network deployment configuration:

The installer installs the software on to your system, and then you use the profile configuration programs (Profile Management Tool or **manageprofiles** command-line utility) to create and configure one or more deployment manager and custom (managed node) profiles and the administrative console to create a customized network deployment configuration. See Installing IBM BPM Advanced using the **Custom installation** and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment

The following diagram illustrates the tasks of the installation and configuration scenarios.

```
                        ┌──────────────┐
                        │    Start     │
                        └──────┬───────┘
                          Decision Point
                               │
                        ┌──────▼───────┐
                        │Install the   │
                        │software      │
                        └──────┬───────┘
                          Decision Point
                    ┌──────────┴──────────┐
             ┌──────▼───────┐      ┌───────▼──────┐
             │Install       │      │Install       │
             │interactively │      │silently      │
             └──────┬───────┘      └──────────────┘
               Decision Point
    ┌────────────┬──────┴─────┬────────────┐
┌───▼────┐  ┌────▼────┐  ┌────▼────┐  ┌────▼─────┐
│Typical │  │Custom   │  │Custom   │  │Custom    │
│install.│  │install. │  │install. │  │install.  │
│        │  │stand-   │  │standard-│  │customized│
│        │  │alone    │  │ized ND  │  │ND        │
└────────┘  └─────────┘  └────┬────┘  └──────────┘
                       Decision Point
               ┌─────────────┴─────────────┐
         ┌─────▼──────┐            ┌────────▼────────┐
         │Use wsadmin │            │Use Deployment   │
         │commands    │            │Environment wizard│
         └────────────┘            └─────────────────┘
```

For conceptual information about network deployment, see "Choosing a stand-alone or network deployment environment" on page 21 and Planning your deployment environment.

For information about topology patterns packaged with the software and supported by the Deployment Environment wizard, see Overview: Deployment environment topologies and patterns.

Installing IBM BPM Advanced using the Typical option

You can use the Typical installation option in the installer to install the software and configure a stand-alone profile automatically. In a Typical installation there is no need to run the Profile Management Tool or run **manageprofiles** after the installation.

This installation option will default the majority of settings but does allow you to specify the installation path and database type.

The Typical option is the quickest way to install and configure the software.

For a Typical installation, you install Process Center and Process Server separately. So, you will run the Typical installation for a Process Center to completion and then run the Typical installation for Process Server to completion.

For information about installing IBM BPM Advanced using the **Typical** option, see Typical installation: IBM Business Process Manager Advanced.

Installing IBM BPM Advanced using the Custom installation and configuring one or more stand-alone profiles

You can use the Custom installation option in the installer to install the software and configure one or more stand-alone profiles using Profile Management Tool or **manageprofiles** command-line utility.

Table 1. Installing IBM BPM Advanced using the Custom installation option and configuring one or more stand-alone profiles

Task	Where to find information	Result after completing the task
Install the software using the Custom installation option.	For information about installing *IBM BPM Advanced* using the Custom installation option, see Custom installation: IBM Business Process Manager Advanced	The custom installation for *IBM BPM Advanced* installs the product binaries for Process Center, Process Designer, and Process Server on to your system. The custom installation for *IBM BPM Advanced* does not create profiles during the install.
Launch the Profile Management Tool.	If you did not launch the Profile Management Tool from the installer, you can do so now. See Starting the Profile Management Tool **Restriction:** You cannot use the Profile Management Tool to create profiles on BPM installations on 64-bit architectures except on the Linux on zSeries platform. Instead, proceed to the next step and use the **manageprofiles** command-line utility.	The Profile Management Tool is started and ready to use. Because data from the Process Center profile is used as input to the Process Server profile creation process, you should create your Process Center stand-alone profile first (before creating the Process Server stand-alone profile).

Table 1. Installing IBM BPM Advanced using the Custom installation option and configuring one or more stand-alone profiles (continued)

Task	Where to find information	Result after completing the task
Create one or more Process Center stand-alone profiles.	Depending on how you want to create your Process Center stand-alone profiles, see one of the following topics: • Creating a Process Center stand-alone profile using the Profile Management Tool • Creating a Process Center stand-alone profile using the manageprofiles utility	You have created a Process Center stand-alone profile. This profile defines your stand-alone server environment and it contains command files, configuration files, and log files. The profile creation process configures the database (common and component-specific) and generates the database tables required to support your stand-alone server environment. You can now create your Process Server stand-alone profiles, or you can install the Process Designer. The decision about which task to do next depends on your planned usage. • If you want to begin using the business process designing capabilities of the software, then you would download and install the Process Designer component. • If your objective is to fully configure the software, including the runtime environment, then you would create the Process Server stand-alone profiles next.
Install the Process Designer.	See Installing the Process Designer	You have installed the Process Designer. For information about how to use Process Designer, see the following topics: • Hiring Sample Tutorial for IBM Process Designer • Authoring environments • Process development with the Process Center To continue configuring your system, see Create one or more Process Server stand-alone profiles
Create one or more Process Server stand-alone profiles.	Depending on how you want to create your Process Server stand-alone profiles, see one of the following topics: • Creating a Process Server stand-alone profile using the Profile Management Tool • Creating a Process Server stand-alone profile using the manageprofiles utility	The stand-alone server environment is now configured and ready to use.

Installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment

You can use the Custom installation option in the installer to install the software and use the Profile Management Tool or `manageprofiles` command-line utility to configure one or more deployment manager and custom (managed node) profiles. After profile creation you can use the Deployment Environment wizard to generate a *standardized network deployment environment*.

The software includes several templates of *topology patterns*. These topology patterns provide the construct for standardized network deployment environments. You implement these patterns by using the Deployment Environment wizard.

The decision on which pattern to select from the Deployment Environment wizard depends on the planned usage of your environment (proof of concept, testing, or production) and the processing capabilities (such as high-availability and failover processing) required by your enterprise.

The installation and configuration scenario described in this section assumes your business needs and requirements can be met by one of the standardized topology patterns included with the software. If you have a scenario that cannot be addressed by the patterns included with the software, you can create a customized network deployment environment using the administrative console. See "Installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment" on page 9.

Table 2. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND

Task	Where to find information	Result after completing the task
Install the software using the Custom installation option.	For information about installing IBM BPM Advanced using the Custom installation option, see Custom installation: IBM Business Process Manager Advanced	The custom installation for *IBM BPM Advanced* installs the product binaries for Process Center (which includes Process Server functionality), Process Designer, and WebSphere ESB on to your system. You are now ready to create the database configuration for your network deployment environment.
Design the database configuration that applies to the environment you are creating.	For information about designing the database configuration for IBM BPM Advanced see Creating a database design file for a stand-alone profile or deployment environment using the database design tool and follow the instructions for designing a network deployment database configuration. Generate the design document and run the SQL scripts for Process Center.	The database configuration, including all of the required database tables generated by the SQL scripts exist on your system. You will reference the design document from the Profile Management Tool or `manageprofiles` utility. You can now begin the profile creation process. For a network deployment environment configuration, use the Profile Management Tool or `manageprofiles` to create the deployment manager profiles and one or more custom (managed node) profiles for the IBM BPM components you will use.

Table 2. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task
Launch the Profile Management Tool.	If you did not launch the Profile Management Tool from the installer, you can do so now. See Starting the Profile Management Tool **Restriction:** You cannot use the Profile Management Tool to create profiles on BPM installations on 64-bit architectures except on the Linux on zSeries platform. Instead, proceed to the next step and use the `manageprofiles` command-line utility.	The Profile Management Tool is ready to use.
Create a Process Center deployment manager profile.	This task assumes that you select parameters in the Profile Management Tool or `manageprofiles` command-line **to point to the database design document** created when you completed the task *Design the database configuration that applies to the environment you are creating*. **Note:** If you have not already created a database design document and generated the SQL from the DDT, you can use the Profile Management Tool configure the database and run the associated SQL. Depending on how you want to create your Process Center profiles, see one of the following topics: • Creating Process Center deployment manager profiles using the Profile Management Tool • Creating Process Center deployment manager and custom profiles using manageprofiles	You have a Process Center deployment manager profile. This profile defines your environment and it contains command files, configuration files, and log files. A deployment manager is a server that manages operations for a logical group, or cell, of other servers. The deployment manager is the central location for administering the servers and clusters.
If you have not yet created the common database, do so now.	See Creating the Common database and tables after profile creation or augmentation	The common database has been created.
Start the Deployment Manager and verify that the start operation was successful.	For information about how to start the deployment manager, see Starting deployment managers	The deployment manager server is started.

Table 2. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task
Create the Process Center custom (managed node) profile or profiles.	This task assumes that you **are not federating nodes** as part of the profile creation process. It assumes that you will set parameters in the Profile Management Tool or **manageprofiles** command for *federating nodes later* (after creating the custom (managed node) profiles.) Depending on how you want to create your profiles, see one of the following topics: • Creating Process Center custom profiles (managed nodes) using the Profile Management Tool • Creating Process Center deployment manager and custom profiles using manageprofiles Repeat this task for each managed node.	You have your custom (managed node) profiles. These nodes are managed by and administered from the deployment manager. You can now federate the node into the Process Center deployment manager cell. The managed node contains a node agent and can contain managed servers. In a managed node, you can configure and run managed servers.
Federate the custom (managed) node to the deployment manager.	See Federating custom nodes to a deployment manager for instructions about how to use the **addNode** command to federate the Process Center custom node or nodes into the Process Center deployment manager cell.	The custom profile is federated into the deployment manager.
Using the Deployment Environment wizard, create a standardized network deployment environment.	For information about how to use the Deployment Environment wizard, see Creating the Process Center deployment environment using a pattern	As part of this task you need to address any deferred configuration items before generating the Process Center deployment environment. You have created your Process Center network deployment environment.

Table 2. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task

Create a cell for Process Server.	To run Process Server, you must create a separate cell.
	
	This involves the same sequence of steps, except you create a Process Server deployment manager and Process Server custom (managed nodes) and then use the Deployment Environment wizard to create the Process Server deployment environment, as described in the following topics:
	• Creating Process Server deployment manager profiles using the Profile Management Tool
	• Creating Process Server custom profiles (managed nodes) using the Profile Management Tool
	• Creating Process Server deployment manager and custom profiles using manageprofiles
	  – Federating custom nodes to a deployment manager
	• Creating the Process Server deployment environment using a pattern
	  As part of this task you need to address any deferred configuration items and then generate the Process Server deployment environment.
		You have created your Process Server network deployment environment.

Perform manual database configuration steps.	You must complete additional database configuration steps before starting the clusters in your deployment environment. For information about these additional steps, see Completing the database configuration for your network deployment environment	You have completed the required manual database configuration activities for the network deployment environment.

Load the database with system information.	See Loading the database with system information for information about how to run the bootstrap utility.
	
	  Windows
	  bootstrapProcessServerData.bat
	
	  Linux UNIX
	  bootstrapProcessServerData.sh
	
	You must run the bootstrap utility prior to the first startup of a cluster member.
		You have loaded the database with system information prior to successfully starting the Process Server / Process Center.

Installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment

The topology patterns packaged with the software and implemented using the Deployment Environment wizard are intended to address a broad spectrum of business processing requirements. However, if you have scenario that the topology patterns do not address sufficiently, you can use the administrative console to create a customized network deployment environment. The table below lists the steps you would perform in such a scenario.

Note: This scenario is intended for users who have an advanced understanding of how to configure product components and functionality using the administrative console. Before you embark on the installation and configuration scenario described in this section, consider using the Deployment Environment wizard to create your network deployment environment.

Note: Command assistance is available for a subset of administrative console actions. When available, command assistance displays the wsadmin scripting command for the last console action you performed. You can then use this data to create wsadmin scripts that automate certain administrative tasks. For more information on command assistance, see Administrative console actions with command assistance.

Table 3. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND

Task	Where to find information	Result after completing the task
Install the software and configure the required profiles.	Complete the tasks listed in "Installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment" on page 5 up to the task *Using the Deployment Environment wizard, create the network deployment configuration*. Instead of using the Deployment Environment wizard, you will create a customized deployment environment manually using the administrative console.	You have created the deployment manager and custom managed nodes and have federated the nodes into the deployment manager cell. The custom installation for *IBM BPM Advanced* installs the product binaries for Process Center (which includes full Process Server functionality), Process Designer and WebSphere ESB on to your system. You can now use the administrative console to create servers, server clusters and the components that will comprise your network deployment environment.
Create and configure servers and clusters using the administrative console.	See Creating and configuring servers and clusters using the administrative console.	You have created the servers and server clusters for your environment.
Configure a server or cluster as a Process Server.	For information about using the administrative console to configure your server or server cluster as a Process Server, see Configuring a server or cluster as a Process Server. You can also configure a server or cluster as a Process Server using wsadmin. See configureProcessServer command.	You have configured the servers or server clusters as Process Servers.

Table 3. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND (continued)

Task	Where to find information	Result after completing the task
Configure the Performance Data Warehouse component on a server or cluster.	For information about using the administrative console to configure Performance Data Warehouse on a server or cluster, see Configuring the Performance Data Warehouse component on a server or cluster You can also configure Performance Data Warehouse on a server or cluster using wsadmin. See configurePerfDW command.	You have configured Performance Data Warehouse on the Process Server.
Configure SCA support for a server or cluster.	For information about using the administrative console to configure SCA support for a server or cluster, see Configuring SCA support for a server or cluster.	You have configured SCA support for the server or cluster.
Configure Business Space.	For information about using the administrative console to configure Business Space, see Configuring Business Space.	You have configured the Business Space component.
Configure Business Process Choreographer.	For information about using the administrative console to configure Business Process Choreographer, see Configuring Business Process Choreographer. If you decide to use scripting rather than the administrative console to configure Business Process Choreographer, see Using the bpeconfig.jacl script to configure Business Process Choreographer.	You have configured Business Process Choreographer.
Configure business rules and selectors.	For information about using the administrative console to configure business rules and selectors, see Configuring business rules and selectors.	You have configured Business Rules and Selectors.
Configure the relationship service.	For information about using the administrative console to configure the relationship service, see Configuring the relationship service.	You have configured the Relationship Service.
Set up the Messaging Service.	For information about using the administrative console to configure the Messaging Service, see *Setting up the messaging server environment*.	You have set up the messaging server environment.
Configure the JNDILookup web service.	For information about using the administrative console to configure the JNDILookup web service, see *Configuring the JNDILookup Web Service*.	You have configured the JNDILookup Web Service.
Configure extended messaging resources.	For information about using the administrative console to configure extended messaging resources, see Configuring extended messaging resources.	You have configured the extended messaging resources.

Table 3. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND (continued)

Task	Where to find information	Result after completing the task
Configure Common Event Infrastructure.	For information about using the administrative console to configure the Common Event Infrastructure, see Configuring Common Event Infrastructure.	You have configured the Common Event Infrastructure.
Configuring IBM Business Process Manager widgets for WebSphere Portal.	For information about using the administrative console to configure widgets for WebSphere Portal, see Configuring IBM Business Process Manager widgets for WebSphere Portal	You have configured widgets for WebSphere Portal.
Configure WebSphere Business Integration Adapters.	For information about using the administrative console to configure the WebSphere Business Integration Adapters, see Configuring WebSphere Business Integration Adapters.	You have configured the WebSphere Business Integration Adapters.
Configure IBM Business Process Manager for Service Federation Management.	For information about using the administrative console to configure IBM Business Process Manager for Service Federation Management, see Configuring IBM Business Process Manager for Service Federation Management.	You have configured IBM Business Process Manager for Service Federation Management.

Load the database with system information.	See Loading the database with system information for information about how to run the bootstrap utility.
	
	`Windows`
	bootstrapProcessServerData.bat
	
	`Linux` `UNIX`
	bootstrapProcessServerData.sh
	
	You must run the bootstrap utility prior to the first startup of a cluster member.
		You have loaded the database with system information prior to successfully starting the Process Server / Process Center.

Chapter 2. Installation types and profiles

There is a relationship between the type of installation you perform, **Typical** or **Custom** and how profiles associated with the installation type are created for each IBM BPM configuration (Express, Standard and Advanced).

The following tables describe the relationships.

Table 4. Profile configuration as part of installation: IBM Business Process Manager Express

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Yes	No	Yes	Not Applicable
Custom	No	Yes	No	No

Table 5. Profile configuration as part of installation: IBM Business Process Manager Standard

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Yes	No	Yes	Not Applicable
Custom	No	Yes	No	No

Table 6. Profile configuration as part of installation: IBM Business Process Manager: Process Server

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	*Process Server only*	No	Yes	Not Applicable
Custom	Optionally A feature allows you to create Process Server and or WebSphere ESB profiles for Unit Test Environment (UTE) only	Yes	No	Yes

Table 7. Profile configuration as part of installation: IBM Business Process Manager Advanced

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Yes	No	Yes	Not Applicable
Custom	No	Yes	No	Yes

Chapter 3. Databases and installation and configuration scenarios

How databases are configured to work with the software is related to the software you are installing and the scenario you are trying to achieve.

In installation scenarios where you will be using the **Typical** installation option, you must pre-create your database, whether that database resides locally (on the same system on which you are installing IBM Business Process Manager or remotely (on a separate system). The only scenario where you are not required to pre-create your database, is if you are installing the DB2 Express database that is embedded with IBM Business Process Manager. DB2 Express is embedded with IBM Business Process Manager on Windows and on Linux for Intel. So, if you do not already have DB2 Express installed, it is optionally installed when you run the IBM Business Process Manager installer, and the installer also creates the common and component-specific databases on DB2 Express. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system.

Any scenario where you are not using DB2 Express for your **Typical** install is considered to be a **Typical** install with an *existing database*, meaning you already have a database installed and you will use the *Existing database panel* of the installer to specify its configuration properties. See Configuring an existing database during a typical installation for details. To use this option, you must ensure that your database has already been created.

You and your database administrator should review the information on configuring databases in the information center prior to installing and configuring the software.

Chapter 4. Preparing to install and configure the software

Use the information listed in the following table to prepare for installing and configuring IBM Business Process Manager.

Before preparing to install and configure the software, you should have created a plan for the deployment environment that you want to create. For more information, see: Planning for IBM Business Process Manager

Table 8. Preparing for installation and configuration

Task	Where to find information	Result after completing the task
Review hardware and software requirements	Depending on your IBM BPM configuration, visit: • IBM Business Process Manager Advanced system requirements • IBM Business Process Manager Standard system requirements • IBM Business Process Manager Express system requirements	You understand the system requirements necessary to support yourIBM Business Process Manager installation.
Review the contents of the installation media	Depending on your IBM BPM configuration, see one of the following topics: • IBM Business Process Manager Advanced product package • IBM Business Process Manager Standard product package • IBM Business Process Manager Express product package	You are familiar with the contents on the installation media
Prepare your operating system	**AIX** Preparing AIX systems for installation **Linux** Preparing Linux systems for installation **Solaris** Preparing Solaris systems for installation **Windows** Preparing Windows systems for installation	You have prepared the operating system of each workstation to be used.

Table 8. Preparing for installation and configuration (continued)

Task	Where to find information	Result after completing the task
Make sure you have installed your database management system.	Consult your database documentation for information about installing and administering your database management system.	If not already the case, your database management system is installed. IBM Business Process Manager embeds the DB2 Express database. If you want to use DB2 Express as your database, you can select it as a feature from the installer and it is installed and configured automatically. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system. **Note:** If you already have a version of DB2 installed and you want to install DB2 Express, you must uninstall DB2 before running the IBM Business Process Manager installer. If the installer detects a version of DB2 installed and you have selected to install DB2 Express from the installer, you will receive a warning message and will not be able to install DB2 Express. **Important:** Linux If you are installing DB2 Express as a root user, you must ensure that all kernel requirements are met before the DB2 Express installation begins. See http://publib.boulder.ibm.com/infocenter/ db2luw/v9r7/index.jsp?topic=/ com.ibm.db2.luw.qb.server.doc/doc/ c0057140.html for a list of the kernel requirements. You can locate the current values by parsing the output of the **ipcs -l** command.

Chapter 5. Planning for IBM Business Process Manager

To ensure that the system that you implement meets your needs, plan your IBM Business Process Manager before you introduce its software into your enterprise information system.

Assessing your requirements

To minimize rework and outages, take the time to study your current environment before you make installation and configuration decisions. Consider your current business requirements and design, the hardware and software already installed, and your current strengths and shortcomings. This planning could also help you minimize your financial investment.

Several factors determine your software needs. These factors can be organized into the following categories.

- Product hardware and software requirements, your own system resource constraints, and the availability of resources to administer and maintain your system
- Applications to be deployed to the runtime environment, and the intended use of the configured environment
- Products, and the versions of these products, to install to meet your requirements

To make wise choices for all these factors, you must understand the following concepts:

- The terminology as it applies to environment configuration
- The administrative architecture of the product that you will install, configure, administer, and maintain
- The available configuration options (through supplied patterns) and how to determine if a pattern addresses your intended use of the product
- The supported methods of implementation, including an understanding of the different task flows for installing the product and configuring the environment

You can use the information in this section to assess and analyze your current and future requirements to develop an environment to meet those requirements.

Important: Depending on your requirements, you might select one of three different configurations for IBM Business Process Manager. For the latest information about platform-specific disk space requirements, supported operating systems, and supported database versions, click one of the following links. You can also find operating system fixes and patches that you must install to have a compliant operating system.

- IBM Business Process Manager Advanced system requirements
- IBM Business Process Manager Standard system requirements
- IBM Business Process Manager Express system requirements

Process and process application considerations

Your current requirements provide the baseline on which to formulate a plan for streamlining integration of your business components. Your vision for the future of your business can provide a guideline that can help you make decisions as your business grows.

You need to know how your product or service is created and delivered. IBM Business Process Manager comes with deployment environment patterns designed to meet the requirements of both production and test environments.

Consider the following:

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- Consider how process applications interact with existing services and back-end systems.
- Consider how process applications handle data and how data flows through your system to address a specific business need.

  Understand how data persists across retrievals, sessions, processes, and other boundaries when you are developing a solution and configuring its environment.

  Consider the following items regarding the process applications to be deployed to your environment:
  - Process application invocation patterns

    You must understand how the runtime environment handles asynchronous invocations and how the SCA runtime environment leverages the underlying message system to implement asynchronous invocations.

    Different applications have different needs. Those needs are determined by factors such as export types, component types, interactions between components, import types, resources needed such as databases or JMS resources, the need for business events, and their transmission mechanism.
  - Types of business processes that you plan to implement (transactional business processes, interruptible business processes, non-interruptible business processes)

    Non-interruptible business processes, or microflows, are short-running business processes that run in one transaction or without a transaction. Non-interruptible business processes are fast with little performance overhead. All activities within one are processed in a single thread.

    Interruptible business processes, or macroflows, are long-running business processes that contain a set of activities, each of which is performed in its own transaction. Interruptible business processes can include activities that require human intervention or calls to remote systems or both. Asynchronous activities cause a business process to be interruptible because these activities might take minutes, hours, or even days to complete.

Resource considerations

Identify your assets to make the best use of your software and hardware resources and to make informed implementation decisions. Assess your current enterprise information system to determine whether you require any additional hardware or software to meet your business needs.

Consider the following factors:
- Familiarize yourself with current hardware and software. Prepare a list of the available assets.
- Determine the number of physical computer systems that you will use and itemize each piece of physical hardware. Record the following information:
  - Amount of installed memory
  - Number and type of installed microprocessors
  - External media
  - Whether a particular unit can be upgraded
- Itemize the currently installed software and database applications. Record the following information:
  - Function
  - Breadth of use across the company
  - Security requirements
- Prepare a list of your current IT personnel. Determine whether you have the required expertise to install and maintain IBM Business Process Manager, as well as the required expertise to manage your databases. Make sure that the appropriate users have user IDs with the authorizations to successfully install all products and files.

Development and deployment version levels

When you try to determine the version levels of IBM Business Process Manager that you need in your environment, your decision depends on the version levels that were used when your applications were

developed. Generally, applications deployed in a previous version of IBM Business Process Manager can run on the next available version of IBM Business Process Manager.

The following table describes compatibility between IBM Business Process Manager V7.5, including IBM Integration Designer V7.5 (previously WebSphere® Integration Developer) and IBM Process Designer V7.5, and prior releases.

Task	Supported?
Deployment from WebSphere Integration Developer version 6.1.0, 6.1.2. 6.2.0 or 7.0.0 to IBM Business Process Manager V7.5.	Yes. **Important:** For WebSphere Adapters V6.1.0, V6.1.2 and V6.2.0, you must install the interim fix titled *Mandatory adapter fix for running 6.1 and 6.2 Adapters on WPS v7.0*. If you do not plan to update the WebSphere Adapter to a V7.0 level, and you plan to continue to use the application with WebSphere Adapter V6.1.0, V6.1.2 or V6.2.0, you must apply this interim fix on the source environment. **Important:** Websphere Adapter for SAP V6.0.2, V6.1.0, V6.1.2 and V6.2.0 are not supported on IBM Business Process Manager V7.5. You must update Websphere Adapter for SAP to V7.0 before you can deploy any applications that use Websphere Adapter for SAP on IBM Business Process Manager V7.5. For more information specific to WebSphere Adapter for SAP, see Postmigration tasks for IBM Business Process Manager. .
Running IBM Business Process Manager V7.5 artifacts on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0 or 7.0.	No. Applications authored with IBM Integration Designer V7.5 cannot be published to or installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0 or 7.0 (any prior release) servers. Applications authored with WebSphere Integration Developer 6.1.0, 6.1.2, 6.2.0 or 7.0 and then generated in IBM Integration Designer V7.5 cannot be published to or installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0 or 7.0 servers. Applications generated using `serviceDeploy` from IBM Business Process Manager V7.5 servers cannot be installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0 or 7.0.0 servers.

Choosing a stand-alone or network deployment environment

Choose a stand-alone environment to evaluate the product or to support development of applications and services. Choose a network deployment environment when your production environment needs additional features such as capacity, availability, scalability, and failover support.

A stand-alone environment is the easiest to install and configure, and requires little planning. A network deployment environment needs more extensive installation and configuration tasks that can involve several roles.

For a network deployment environment, you should carefully plan the characteristics with a goal of meeting the requirements of the work that business applications and services are to perform on it. There are multiple aspects to consider, including the following:

• Number of physical workstations and hardware resources that you require

- Number of clusters and cluster members required to support your business
- Number of databases required
- Authentication roles and security considerations
- The method that you will use to implement the deployment environment
- Other supporting resources such as a user registry (for security), one or more HTTP servers (for web content), necessary firewalls, load balancers, and so on.

Stand-alone environment

You can use a stand-alone environment to deploy service component architecture (SCA) modules in one server process.
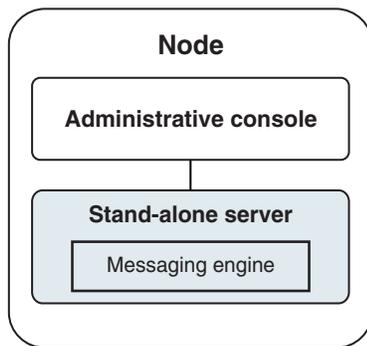
Figure 1. A stand-alone environment

To evaluate the product or to support development of applications and services, you can install samples to deploy a sample solution to the stand-alone server. You can explore the resources used for this sample in the administrative console.

To start with a stand-alone environment and then to include it into a network deployment environment, federate it into a deployment manager cell. You can do so only if no other nodes have been federated to that cell.

When you install the product software, you can choose to create the profile for a stand-alone development environment (qesb). The profile that is created is suitable only in a test scenario or to support application development. For a scenario in which you want a stand-alone server environment for production purposes, install the product software. Then use the Profile Management Tool or `manageprofiles` command-line utility to configure the stand-alone profiles.

Network deployment environment

A network deployment environment contains a collection of interconnected servers and clusters to run your service requester and provider enterprise applications and their mediation modules. The environment can also include application servers on WebSphere Application Server.

A network deployment environment provides a collection of interconnected servers and clusters that support application components:
- Process Server
- Performance Data Warehouse
- Business Process Choreographer
- Business rules
- Mediations

- Relationships

The environment also supports servers for WebSphere Enterprise Service Bus and WebSphere Application Server.
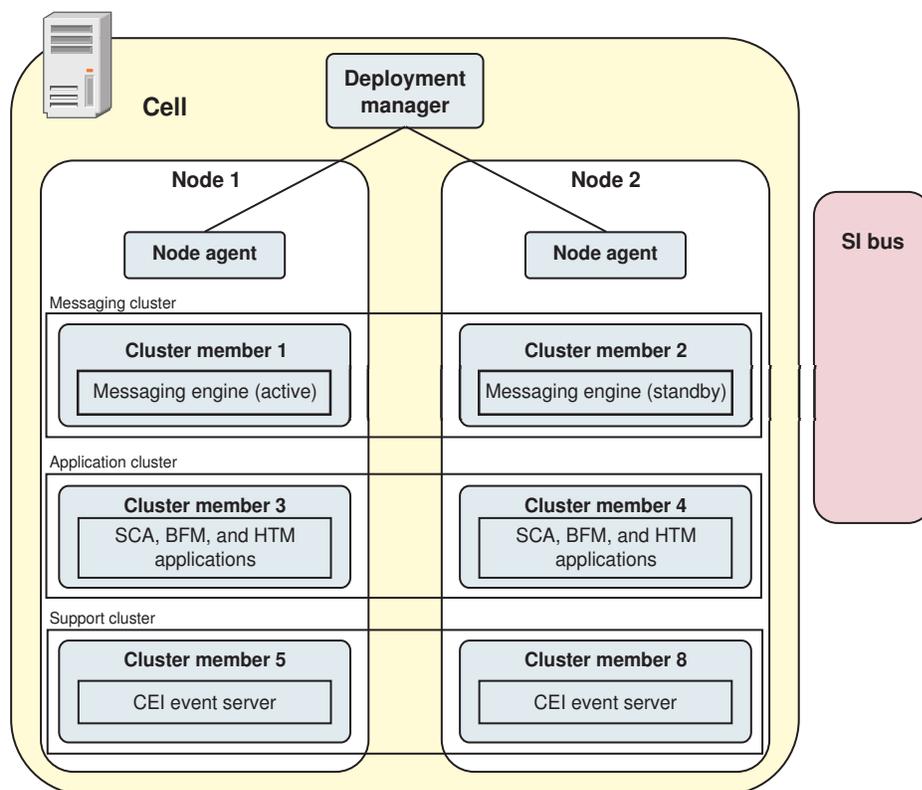
Figure 2. A network deployment environment

The servers and clusters run on one or more managed *nodes*, each of which corresponds to a logical or physical computer system.

Servers can be grouped into *clusters* to support load-balancing and failover.

A deployment environment of interconnected servers or clusters provides performance, availability, scalability, isolation, security, and stability characteristics that cannot be provided by a stand-alone server. In addition, you can manage all the servers or clusters from a centralized *deployment manager*.

A complete collection of servers and clusters managed by a deployment manager is configured and managed as a *deployment environment*.

To install a network deployment environment, install the product software, and then configure profiles for a deployment manager and one or more custom (managed) nodes. Later, you can create the deployment environment to be managed. You can create a *standardized* deployment environment from provided topology patterns, or you can configure clusters and servers to create a *customized* deployment environment.

How intended usage affects your choice of stand-alone or network deployment environment

The following table shows how the intended use of IBM Business Process Manager affects your choice of stand-alone or network deployment environment, and the associated amount of planning involved:

Table 9. Choice of stand-alone or network deployment environment for intended use of IBM Business Process Manager

Intended use	Configuration path and planning activities
A single server Unit Test Environment (UTE)	The stand-alone profile configuration path, with little planning required.
A clustered test environment	Standard Remote Messaging and Remote Support topology pattern of network deployment environment, with little planning required.
A production environment, with good flexibility	Standard Remote Messaging and Remote Support topology pattern of network deployment environment, with little planning required.
A highly optimized production environment	A customized topology that addresses unique processing requirements and business requirements. Detailed planning required as described in this section of the documentation.

Installation types and profiles

There is a relationship between the type of installation you perform, **Typical** or **Custom** and how profiles associated with the installation type are created for each IBM BPM configuration (Express, Standard and Advanced).

The following tables describe the relationships.

Table 10. Profile configuration as part of installation: IBM Business Process Manager Express

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Yes	No	Yes	Not Applicable
Custom	No	Yes	No	No

Table 11. Profile configuration as part of installation: IBM Business Process Manager Standard

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Yes	No	Yes	Not Applicable
Custom	No	Yes	No	No

Table 12. Profile configuration as part of installation: IBM Business Process Manager: Process Server

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	*Process Server only*	No	Yes	Not Applicable

Table 12. Profile configuration as part of installation: IBM Business Process Manager: Process Server (continued)

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Custom	Optionally A feature allows you to create Process Server and or WebSphere ESB profiles for Unit Test Environment (UTE) only	Yes	No	Yes

Table 13. Profile configuration as part of installation: IBM Business Process Manager Advanced

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Yes	No	Yes	Not Applicable
Custom	No	Yes	No	Yes

Planning a network deployment environment

Setting up a network deployment environment involves many decisions, such as the number of physical workstations and the type of pattern you choose. Each decision affects how you set up your deployment environment.

Before you plan your deployment environment complete the following tasks:

- Choose a database type
- Identify available resources
- Identify necessary security authorizations

When you plan the layout of interconnected servers, you must make some decisions. These decisions influence trade-offs that you make between the available hardware and physical connections, the complexity of the management and configuration and requirements such as performance, availability, scalability, isolation, security, and stability.

1. Identify the functional requirements of the deployment environment.

   a. Identify the features or runtime capabilities of your deployment environment.

      Consider whether the deployment environment will support other IBM Business Process Manager products and non-BPM products in addition to IBM Business Process Manager.

   b. Identify the component types that you will deploy.

      Consider the component types and the interactions between components as part of the requirements.

   c. Identify the import and export implementation types and transports.

      Consider the resources needed for the databases or Java™ Message Service (JMS) resources and the need for business events and their transmission mechanism.

   d. Identify any functional requirements that are not related to applications.

      Consider security servers, routers, and any other hardware or software requirements to handle business events.

2. Identify the capacity and performance requirements for your environment.

3. Decide on the number of physical servers that you need for each function.
4. Design your deployment environment.

   Decide on the pattern. For IBM Business Process Manager, you can select one of four established topology patterns:
   - Single Cluster
   - Remote Messaging
   - Remote Messaging and Remote Support
   - Remote Messaging, Remote Support, and Web

   If none of these patterns meets your needs, you can use the administrative console to create a custom deployment environment.

   Note: If your configuration supports multiple IBM Business Process Manager and non-BPM products in addition to, and compatible with, IBM Business Process Manager, the patterns of those products would be available to you when you create your deployment environment.

   For more information about the patterns and the differences between them, see "Topologies of a network deployment environment" on page 31.
5. Understand the methods available to you for configuring your deployment environment.

   You can configure the following types of deployment environments for IBM Business Process Manager:
   - A standardized network deployment environment

     A standardized network deployment environment is based on a topology pattern template included with the software and implemented by using the Deployment Environment configuration wizard or wsadmin commands.

     You can use the Deployment Environment Configuration wizard to create clusters with the Single Cluster, Remote Messaging, Remote Messaging and Remote Support, and (if applicable) Remote Messaging, Remote Support, and Web cluster topology patterns.
   - A customized network deployment environment

     A customized network deployment environment is a configuration that you create from the administrative console, as opposed to a "template-based" configuration from the Deployment Environment wizard.

     You should create a customized network deployment environment only if the topology patterns that are included with the software do not meet your configuration needs.

     As is the case with the standardized environment, you can create a customized network deployment environment with wsadmin.

Overview: Deployment environment topologies and patterns

A network deployment environment can have many topologies, and can be created from several standard topology patterns.

What is a topology?

A topology is the physical layout of the *deployment environment* required to meet your business needs for capacity, availability, and scalability.

You can set up topologies for both the Process Center and Process Server components of IBM Business Process Manager.

Many factors affect how you design and implement your topology. For example, you must consider business and application requirements, resource requirements and constraints, the intended purpose of the environment, and the operating system.

IBM Business Process Manager includes patterns for the following topologies, which you can use to address many business scenarios, from proof-of-concept (POC) to a fully functional production environment:

- Single Cluster
- Remote Messaging
- Remote Messaging and Remote Support
- Remote Messaging, Remote Support, and Web

Each topology pattern has certain design characteristics that address a particular business need. For example, on distributed systems, the Single Cluster topology pattern is typically used for a testing or proof of concept scenario. On z/OS® systems, this topology pattern is the default pattern and can be used in production environments.

The design characteristics of each topology have been captured as *topology patterns* that are supplied as configuration templates with the product.

You are not obligated to use a standardized (IBM-supplied) topology pattern. If none of the topology patterns address your specific need, you can create a custom topology pattern.

The purpose of deployment environment patterns

A deployment environment topology pattern specifies the constraints and requirements of the components and resources involved in a deployment environment. There are IBM-supplied topology pattern for each topology layout. These topology patterns provide rules and guidelines for component interaction that are characteristic of the most commonly used BPM topology patterns. The IBM-supplied topology patterns are based on well-known and tested configuration scenarios. They contain a repeatable and automated method of creating a deployment environment. Each topology pattern is designed to meet the configuration requirements and business needs of the associated topology. Using topology patterns helps you create a deployment environment in the most straightforward way.

Because the deployment environment topology patterns represent recommended topologies with component configurations that work together, you can be sure that you are building a fully functional deployment environment. You can use the configuration rules of a deployment environment topology pattern to generate a fast path configuration. This action is possible because many design decisions are implemented in the topology pattern; for example, which components to configure, and which default parameters and resources are needed.

Each supplied deployment environment topology pattern addresses a specific set of requirements. Most requirement sets can be met when you use one of these topology patterns. To select a topology pattern, complete all of the following steps:

- Understand the requirements of the business solution that you are creating.
- Review and understand the capabilities and characteristics of the IBM-supplied topology patterns.
- Decide which topology pattern to use.

  If none of the IBM Business Process Manager topology patterns suit your needs, you can use the administrative console or scripting (wsadmin commands) to create a customized topology pattern.

Databases and deployment environments

Before you create and configure a network deployment environment, you must configure your database and create the required database tables. At a minimum, to use IBM Business Process Manager, you need to configure the following databases on your database management system:

- The Common database (CMNDB)
- The Process Server database (BPMDB)

- The Performance Data Warehouse database (PDWDB)

For a stand-alone server configuration, use the **Typical** installation option to configure these databases and create the required database tables automatically.

For a network deployment environment (customized deployment environment or standardized deployment environment), you or your database administrator must configure the databases outside the installer. Additional databases are required to support additional functionality. For example, if your IBM Business Process Manager configuration includes Business Process Choreographer, Business Space, or Common Base Event monitoring, you or your database administrator must configure these databases and use supplied utilities or scripts to create the required database tables. You must do this configuration before you can create the network deployment environment.

For more information, see Planning your database configuration.

Functions of IBM-supplied deployment environment topology patterns

Any IBM Business Process Manager deployment contains a basic set of functions that together form a complete production environment.

To design a robust deployment environment, you must understand the functionality that each cluster can provide in an IBM-supplied topology pattern or custom deployment environment. You can allocate a specific type of function (for example, the support infrastructure function) to a particular cluster. Understanding the functions can help you choose the deployment environment topology pattern that best meets your needs.

For network deployment, clusters can collaborate to provide specific functionality to the environment. Depending on your requirements, you assign specific functions to each cluster within the deployment environment, to provide performance, failover, and capacity.

The clusters configured in a deployment environment provide the following functions.

The functions can exist in a single cluster, or can be spread across multiple clusters. Each standardized (IBM-supplied) topology pattern creates a different number of clusters to support the functions. The number of clusters in your deployment environment depends on the topology pattern that you are using.

Application deployment target
> An application deployment target is the set of servers (cluster) to which you install your applications (for example, human tasks, business processes, and mediations). Depending on which deployment environment topology pattern you choose, the application deployment target might also provide messaging infrastructure and supporting infrastructure functions. Select the appropriate product depending on the type of applications that you intend to deploy.
> - If the applications contain human task or business process artifacts, install Process Server.
> - If the applications contain mediation modules only, install WebSphere Enterprise Service Bus.
>
> In a Single Cluster topology pattern, the application deployment target provides the entire functionality of the deployment environment.

Supporting infrastructure
> The supporting infrastructure includes the Common Event Infrastructure (CEI) server and other infrastructure services used to support your environment and manage your system. These services include:
> - Business rules
> - Selectors
> - Human tasks
> - Business processes

Important: You must use a custom profile with the same product functionality for this node as you did for the application deployment target cluster.

The business rules are not tied to the Supporting infrastructure cluster. In fact, business rules can exist and work everywhere in the cell. The business rules administrative function (performed from the Business Rules Manager) can be deployed on the Supporting Infrastructure cluster (in a three cluster configuration) or in the Web application infrastructure cluster (in the four cluster configuration). The same principle applies to the human tasks and business processes. The human tasks and business processes run on the Application deployment target cluster, because that is where the human task and business process containers are configured. However, you administer processes and tasks from the Business Process Choreographer Explorer, which can reside on the Supporting Infrastructure cluster (in a three cluster configuration) or on the Web application infrastructure cluster (in a four cluster configuration).

Messaging engine infrastructure
The messaging infrastructure is the set of servers (cluster) where the messaging engines are located. The messaging infrastructure is used to provide asynchronous messaging support for your applications and for the internal messaging needs of the IBM Business Process Manager components. The messaging engines enable communication among the nodes in the deployment environment. Your cluster can consist of members on nodes created with WebSphere Application Server instead of IBM Business Process Manager if the cluster solely provides the messaging function.

Web application infrastructure
Consists of a cluster where the web-based components Business Process Choreographer Explorer, Business Space, and Business Rules Manager are located.

For topologies in all environments, the fundamental pieces of IBM Process Server and WebSphere ESB are always similar. In all IBM Process Server and WebSphere ESB cells, the deployment manager is the central point of administration for the cell.

The following diagram illustrates the points of interest in an IBM Process Server deployment environment configured using a Remote Messaging and Remote Support topology pattern. This topology pattern is identical to the Process Center deployment environment, except that the Process Center deployment environment has a Process Center console in the application deployment target cluster. The Process Server network deployment environment does not include a Process Center console.

DMGR
*Administrative
Console*

Application Target Cluster
(AppTargetCluster)

ATC_member1   ATC_member1

Databases

CMNDB   MEDB   PDWDB   BPMDB

BPEDB

Service Integration Buses

Messaging Engine Cluster
(MECluster)

ME_member1   ME_member2
ME ME
ME ME

CEI
BPC
SCA.SYSTEM
SCA.APP

Support Cluster
(SupportCluster)

Sup_member1   Sup_member2
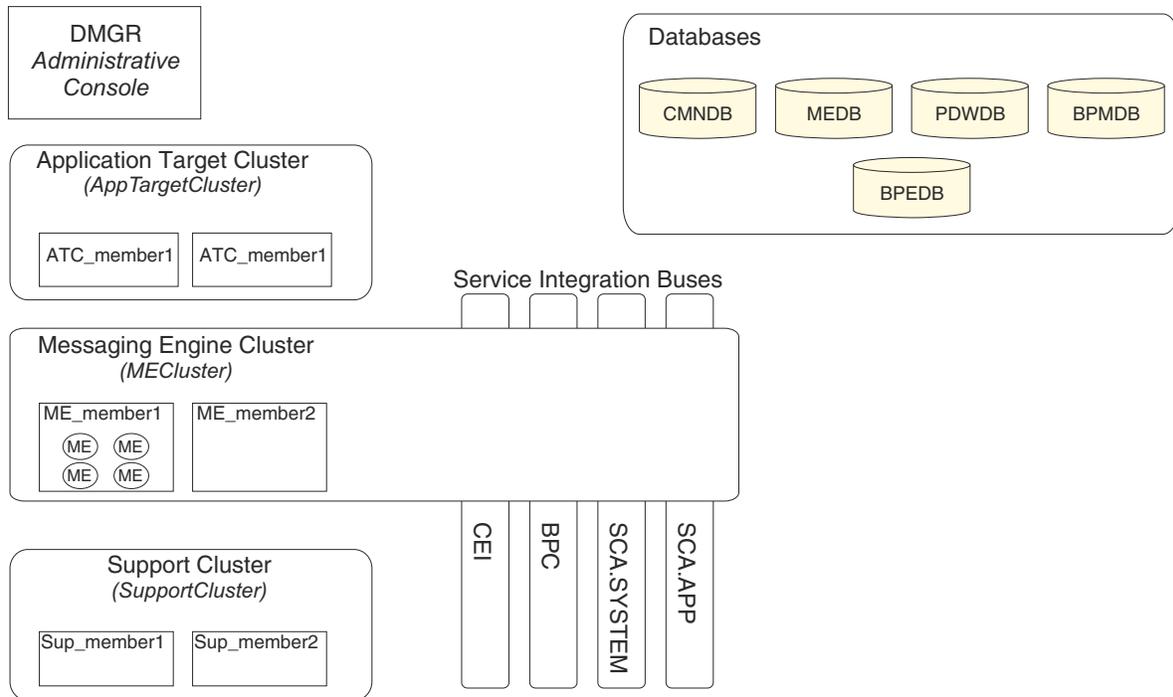
This diagram includes:

- **Deployment Manager** (DMGR): A server that manages operations for a logical group or cell of other servers.
- **Application Target Cluster**: The deployment target for customer applications. This cluster is configured to provide functionality for BPEL processes, human tasks, process applications, and SCA. In a Process Center deployment, this cluster also includes the Process Center console.
- **Databases**:
  - Common database (CMNDB) - Required. Contains tables shared on a cell-wide basis for multiple IBM BPM Advanced Process Server and WebSphere ESB capabilities.
  - Process Server database (BPMDB) - Required. Contains tables for IBM BPM Advanced Process Server capabilities.
  - Performance Data Warehouse database (PDWDB) - Required. Contains tables for Performance Data Warehouse capabilities.

– Messaging Engine database (MEDB) - Each messaging engine requires a unique set of database tables.

– Business Process database (BPEDB) - Each deployment target that is configured for Business Process Choreographer requires a set of tables for Business Process Choreographer functions.

- **Service Integration Buses (SIBuses)**: At least one server or cluster is a member of each of the SIBuses. On multiplatforms, the messaging engine cluster is a member of each of the SIBuses. The bus member hosts a single messaging engine (ME) for each SIBus that it is associated with.

- **Messaging Engine (ME) Cluster**: Hosts the messaging engines. The ME Cluster is a member of each of the four service integration buses.

- **Support Cluster**: The Support Cluster hosts the applications that provide some utility for, but do not contribute to the workload of, the Application Target cluster. For example, the Support Cluster might host the Business Rules Manager.

Topologies of a network deployment environment

A topology is the physical layout of the deployment environment. You can create the topology that best addresses your business needs by choosing one of the patterns provided by IBM or by creating your own customized pattern.

Related concepts:

"Considerations for selecting a topology" on page 41
Selecting an appropriate topology for your deployment environment depends upon several factors.

"Topology patterns and supported product features" on page 43
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Single Cluster topology pattern

The *Single Cluster* topology pattern is an IBM-supplied topology pattern. In a Single Cluster topology pattern, all the functions of the deployment environment are combined into a single cluster.

This is the default pattern for IBM Business Process Manager for z/OS.

A Single Cluster topology pattern is ideal for limited hardware. Because all the components are installed in the same cluster, fewer physical machines are required. However, because each server instance must run the supporting applications and your integration applications, you need more memory for the individual Java Virtual Machines (JVMs). In addition, one or more members of the cluster must also run the messaging engines required for asynchronous interactions. Thus, the Single Cluster topology pattern is typically used for proof of concept, development, and testing environments.

Combining all aspects of the IBM Business Process Manager environment into a single cluster has other implications aside from the increased memory requirements.

- Because asynchronous interactions (involving JMS and MQ/JMS bindings), human tasks, state machines, and long-running business processes can make extensive use of the messaging infrastructure, a single cluster environment is not ideal for applications with these components.

- Any messaging requirements must be kept to a minimum with this topology pattern (except for z/OS).

- Service Component Architecture (SCA) internal asynchronous invocations, the Java Message Service (JMS), and MQ messaging bindings do not support multiple messaging engines in the same cluster.

If necessary, choose one of the other topology patterns in which the messaging infrastructure is in a separate cluster from the application deployment target.

The Single Cluster topology pattern is suitable for scenarios that are focused on running applications and on synchronous invocations. This topology pattern is also not ideal if you intend to make extensive use of the Common Event Infrastructure (CEI). Generating events and CEI-related messaging traffic, places an additional burden on the cluster members.

From an administrative and scalability perspective, the Single Cluster topology pattern has advantages. A single cluster where each member runs all the IBM Business Process Manager components are simpler to administer. Instead of several server instances in multiple clusters, you have a single cluster with fewer members. If the needs of your environment grow, scaling the infrastructure is a simple matter of adding additional nodes and cluster members. Thus, the process of adding capability is simple, but all components are scaled at the same rate. For example, each additional cluster member adds CEI processing whether you need it or not. If the messaging engines spread across server members use policies, there could be some additional administrative effort in creating and maintaining the policies.

In a Single Cluster topology pattern, all deployment environment functions and components run on a single cluster:
- Service Component Architecture (SCA) application bus members
- SCA system bus members
- Business Process Choreographer bus members
- Business Process Choreographer components such as the Business Process Choreographer Explorer
- Business Process Choreographer container
- CEI bus members
- CEI server
- Business Rules manager
- Application deployment target

  You configure the application deployment target to support SCA applications and Business Process Choreographer components.

See the following graphical representation of the Single Cluster topology pattern.
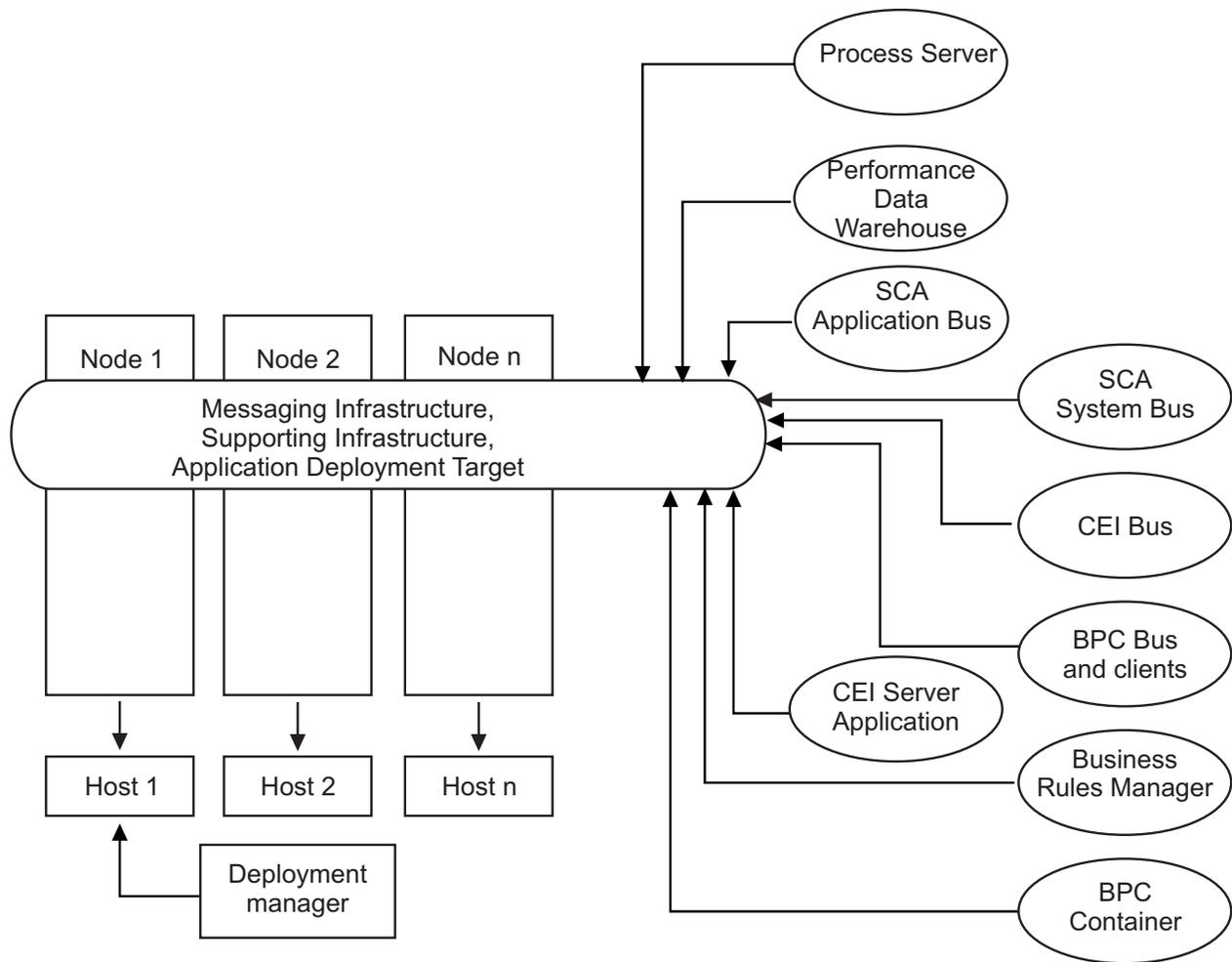
Process Server

Performance Data Warehouse

SCA Application Bus

SCA System Bus

CEI Bus

BPC Bus and clients

Business Rules Manager

BPC Container

CEI Server Application

Node 1 Node 2 Node n

Messaging Infrastructure,
Supporting Infrastructure,
Application Deployment Target

Host 1 Host 2 Host n

Deployment manager

Remote Messaging topology pattern

The *Remote Messaging* topology pattern is an IBM-supplied topology pattern. In a Remote Messaging topology pattern, the deployment environment functions are divided between two separate clusters.

The Remote Messaging topology pattern provides a separate cluster for the messaging function. This topology pattern is suitable for scenarios involving asynchronous invocations, because the cluster can be scaled for this load. The components are divided between the two clusters.

For environments that must support numerous human tasks, long-running business processes, state machines, and asynchronous interactions, a Remote Messaging topology pattern has advantages over the Single Cluster topology pattern.

Separating the messaging infrastructure into a separate cluster removes the messaging overhead from the application target cluster. When you have a separate messaging infrastructure, you need less memory for the application target cluster members. This topology pattern also differs from the Single Cluster topology pattern in terms of the hardware required. Because there are two clusters with multiple cluster members, the hardware requirements are greater for distributed environments.

From an administrative perspective, the requirements for the Remote Messaging topology pattern are greater than the requirements for the Single Cluster topology pattern. Additional clusters and additional cluster members increase the administrative effort required. In addition, because you are distributing the messaging engines across the members of the messaging cluster, you must create and maintain policies.

In the Remote Messaging topology pattern, the supporting applications and the Common Event Interface (CEI) components are still part of the application target cluster. Thus, for environments that make extensive use of CEI, the Remote Messaging topology pattern might not be ideal either. For small to medium-sized businesses, or for businesses without extensive monitoring or auditing requirements, this topology pattern is generally suitable.

The scalability options for the Remote Messaging topology pattern are as straightforward as the options for the Single Cluster topology pattern. Because the messaging engines are subject to one of n policies (each messaging engine is active on only one server), adding additional members to the messaging cluster has little effect. When you use policies to spread the messaging engines across server members, you can divide the messaging burden across a maximum of three servers. (The SCA.SYSTEM and SCA.APPLICATION engines are active on the same server.) Thus, adding more than three cluster members to the messaging cluster has no effect on the processing capability of the messaging infrastructure. Scaling the application target cluster is relatively easy. If you need additional processing capability for your applications or for the supporting infrastructure, you can add additional nodes and members to the application target cluster.

Messaging infrastructure cluster:
- Service Component Architecture (SCA) application bus members
- SCA system bus members
- Business Process Choreographer bus members
- CEI bus members

Application deployment target cluster:
- CEI server application
- Business Rules manager
- Business Process Choreographer components such as the Business Process Choreographer Explorer
- Application deployment target
  You configure the application deployment target to support SCA applications and Business Process Choreographer components.
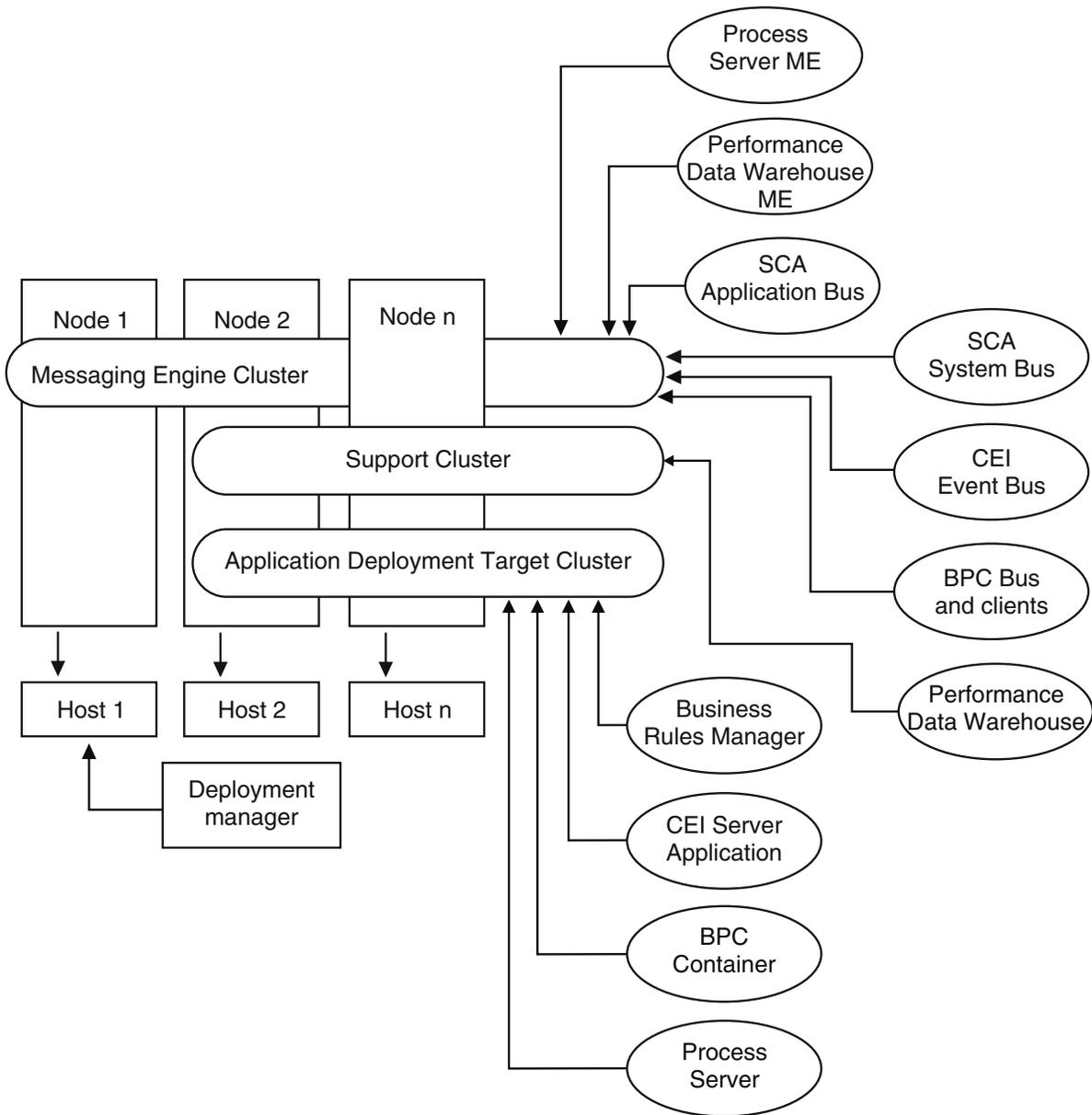
Figure 3. Remote Messaging topology pattern

Remote Messaging and Remote Support topology pattern

The *Remote Messaging and Remote Support* topology pattern is an IBM-supplied topology pattern. In a Remote Messaging and Remote Support topology pattern, the deployment environment functions are divided among three separate clusters.

With this three-cluster topology pattern, resources are allocated to the cluster that handles the highest loads. This topology pattern is the most flexible and versatile, and is preferred by most users (except for z/OS). The components are divided among the three clusters.

For many customers with large computing infrastructures, the Remote Messaging and Remote Support topology pattern is the preferred environment. The hardware requirements for distributed platforms are

more intensive. However, you have greater flexibility in adjusting and tuning memory usage for the Java virtual machines (JVMs) when you have three or more clusters with multiple members performing specific functions.

When you create three clusters, each with its own functions and applications, you add an additional administrative burden. As you add clusters and cluster members, your performance tuning plan and the troubleshooting burden can expand greatly. Spreading messaging engines across the members of the messaging cluster also adds to the administrative burden associated with creating and maintaining policies.

From a scalability standpoint, the Remote Messaging and Remote Support topology pattern provide the most flexibility. Because each of the distinct functions within IBM Business Process Manager is divided among the three clusters, you can pinpoint performance bottlenecks and adjust the cluster size fairly easily. If you need additional Common Event Interface (CEI) processing, you can simply add a node and cluster member to the support cluster. Similarly, if you need more processing capability for your business processes or human tasks, you can add additional nodes and members to the application target cluster. Because expanding the messaging infrastructure beyond three cluster members has no effect on processing capability, the scalability limitations of the Remote Messaging topology pattern also apply to the Remote Messaging and Remote Support topology pattern.

As with the Remote Messaging topology pattern, the Remote Messaging and Remote Support topology pattern provides an ideal environment for long-running business processes, state machines, human tasks, and asynchronous interactions (including JMS and MQ/JMS bindings).

Because the application target cluster runs your business integration applications only, performance tuning and diagnostics are much simpler than in the topology patterns where the application target cluster has additional responsibilities. The Remote Messaging and Remote Support topology pattern is also ideal for environments that make extensive use of CEI for monitoring and auditing (including environments with IBM Business Monitor). When you separate the support infrastructure into its own cluster, you have a dedicated set of cluster members for CEI and for supporting applications.

Messaging infrastructure cluster:
* Service Component Architecture (SCA) application bus members
* SCA system bus members
* Business Process Choreographer bus members
* CEI bus members

Supporting infrastructure cluster:
* CEI server application
* Business Rules manager
* Business Process Choreographer components such as the Business Process Choreographer Explorer

Application deployment target cluster:
* Application deployment target
  You configure the application deployment target to support SCA applications and Business Process Choreographer components.
* Business Process Choreographer container
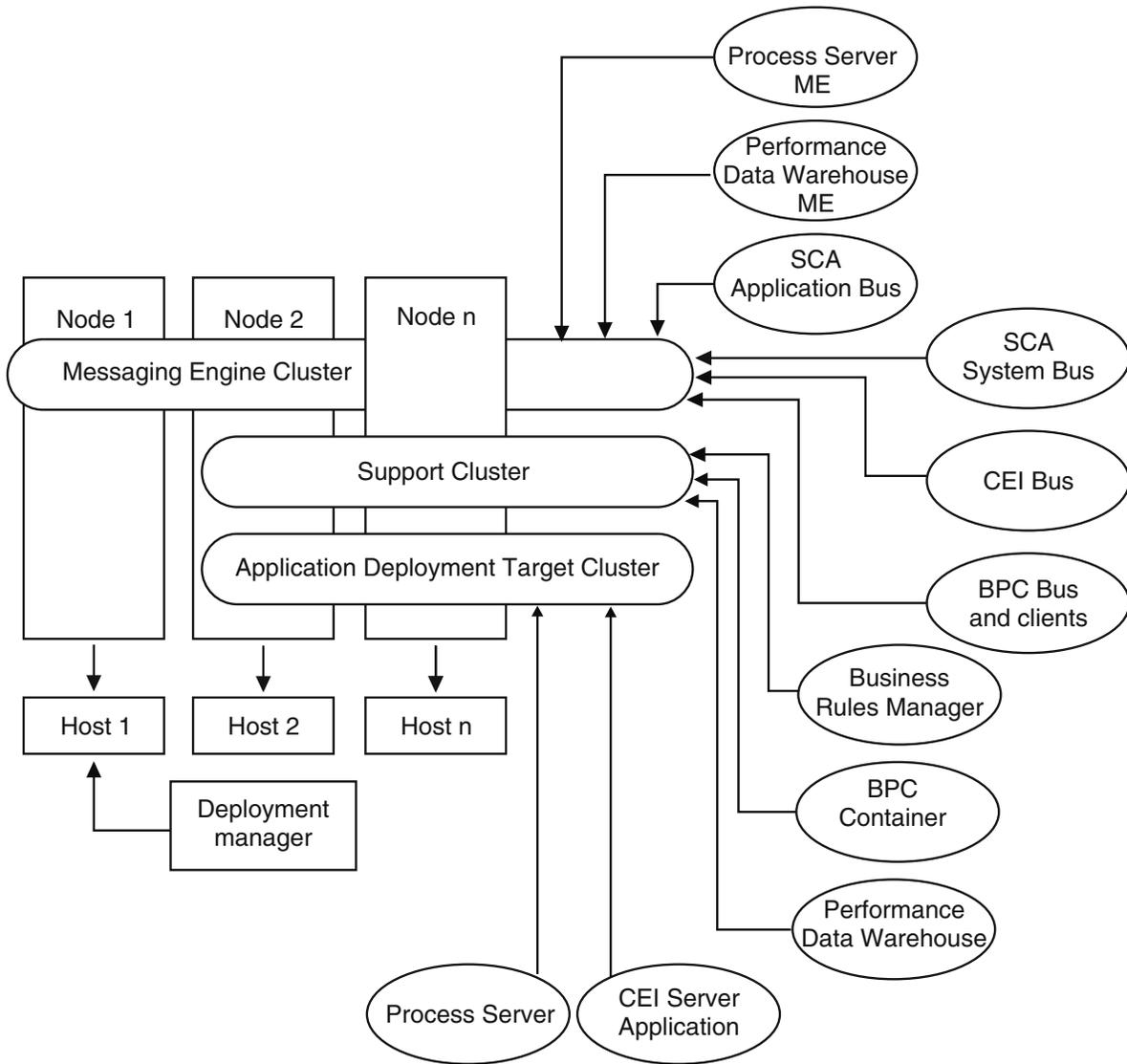
Figure 4. Remote Messaging and Remote Support topology pattern

Resource allocation example

The following figure shows one way to use the Remote Messaging and Remote Support topology pattern to allocate resources. The figure shows three hosts. Host A has Server 1 and Server 3; Host B has Server 2, Server 4, and Server 5 and Host C has Server 6 and Server 7. Because the heaviest load for this installation is for application use, more resources for Server 1, Server 2, and Server 6 are allocated for the application deployment target cluster (Cluster 3) than for the other functions.

Important: Load balancing is not available for the default configuration Remote Messaging and Remote Support topology pattern. That configuration uses a single messaging engine bus, while the load balancing feature requires at least two messaging engine buses.
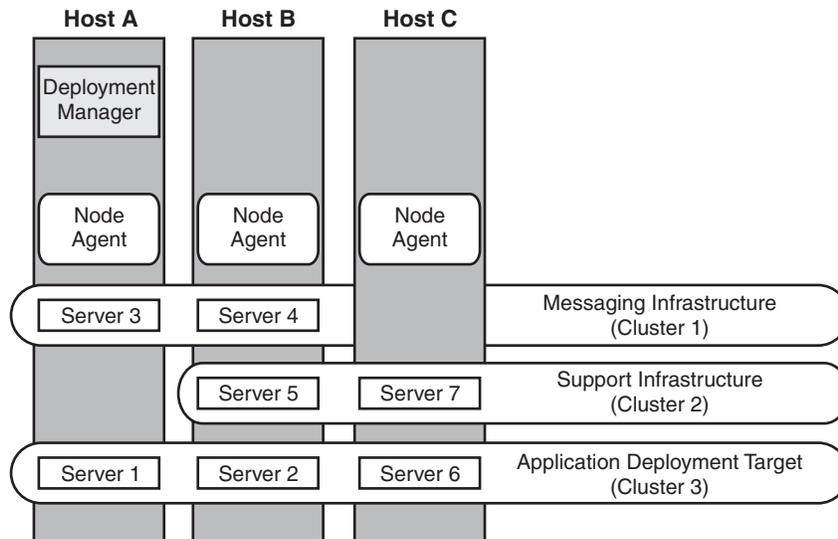
Figure 5. Resource allocation example

Remote Messaging, Remote Support, and Web topology pattern

The *Remote Messaging, Support and Web* topology pattern is an IBM-supplied topology pattern. In a Remote Messaging, Support and Web topology pattern, the deployment environment functions are divided among four separate clusters.

Remote Messaging, Support and Web topology pattern is the recommended starting topology for IBM Business Process Manager Advanced.

Note: Do not use this pattern for a Standard configuration unless it includes IBM Business Monitor.

This four-cluster topology pattern is similar to the Remote Messaging and Remote Support topology pattern, except that supporting web applications reside on their own cluster.

Application deployment cluster:
- Application deployment target

  You configure the application deployment target to support SCA applications and Business Process Choreographer components.
- Business Process Choreographer container

Messaging infrastructure cluster:
- SCA application bus members
- SCA system bus members
- Business Process Choreographer bus members
- Common Event Interface (CEI) bus members

Supporting infrastructure cluster:
- CEI server application
- IBM Cognos Business Intelligence, for dimensional view of data

Web application cluster:

- Business Rules manager
- Business Process Choreographer Explorer
- Business Space
- REST API Services

In a Remote Messaging, Support and Web topology pattern, the deployment environment functions are divided among four separate clusters. One cluster is used for messaging functionality, one cluster for support functionality, one cluster for applications, and one cluster for web-based functions.

In addition to the ability to precisely control the individual components in your environment, the advantages of this topology pattern are similar to the advantages of the Remote Messaging and Remote Support topology pattern.

See the following graphical representation of a Remote Messaging, Support and Web topology.
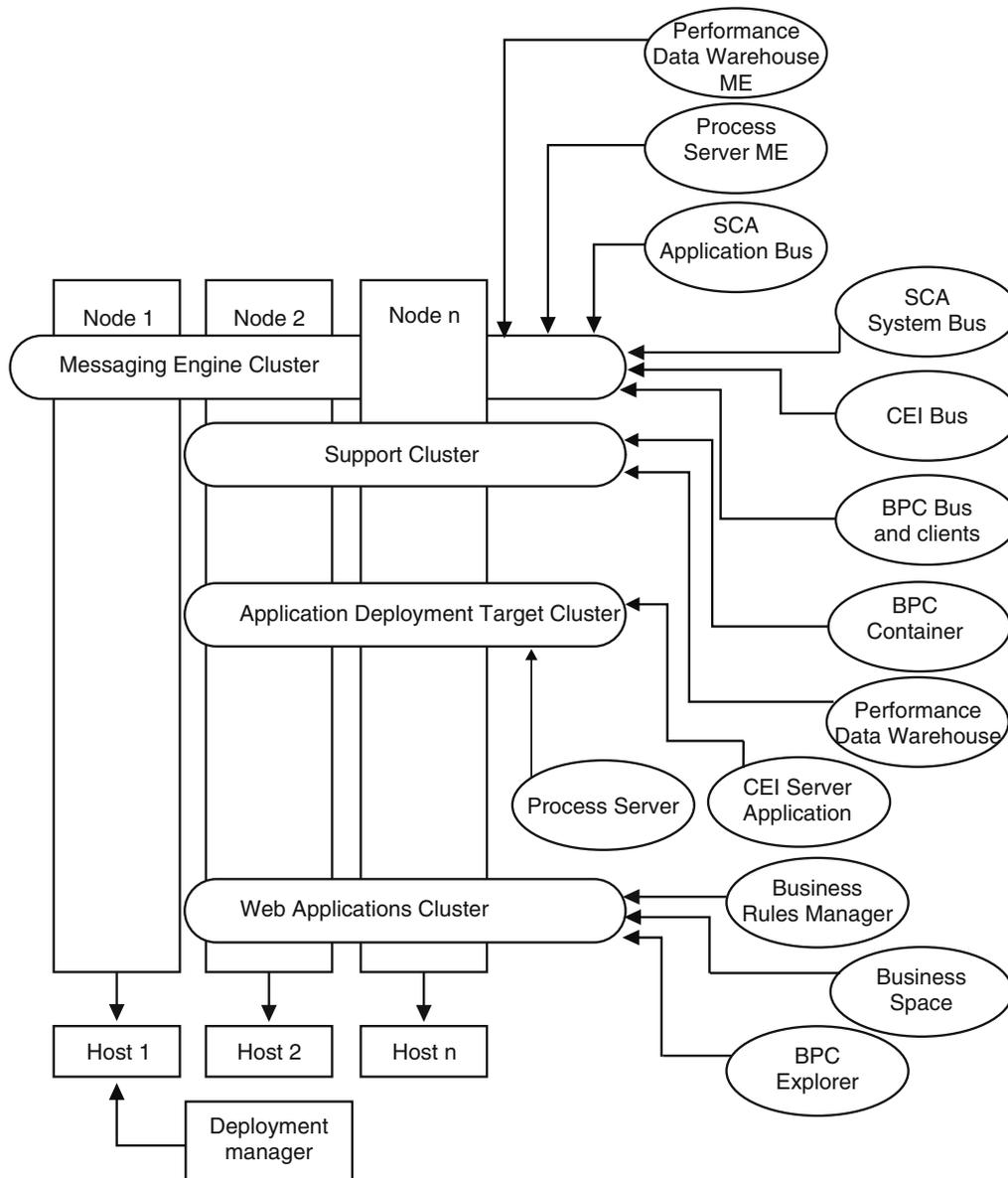
Figure 6. Remote Messaging, Support and Web pattern

Customized topology

A customized topology addresses the processing and business requirements unique to your situation. It is not an IBM-supplied topology pattern, but rather a topology that you create and then tailor to your specific needs.

If you need to define your own deployment environment topology, a customized topology is by far the most flexible. The IBM-supplied topologies (Single Cluster, Remote Messaging, Remote Messaging and Remote Support, and Remote Messaging, Remote Support, and Web), deploy all IBM Business Process Manager components to their default locations. You might or might not need the additional overhead associated with these components. For example, if your organization does not need Common Event Interface (CEI), you could create a custom topology that removes CEI support from your environment.

Similarly, if your organization has governance rules that prevent you from taking advantage of the Business Rules Manager, you could remove it from your deployment environment.

Except for the ability to control the components deployed in your environment, the advantages of custom topologies are similar to the advantages of the Remote Messaging and Remote Support topology. The disadvantages are also similar.

Important: Creating a customized network deployment environment is more labor-intensive than using an IBM-supplied topology pattern, which can be created from the Deployment Environment configuration wizard. Before you attempt to create a customized network deployment environment, make sure that none of the IBM-supplied topologies address your needs. You should attempt to create a customized network deployment environment only if you have a solid understanding of the features and functions of the administrative console.

Considerations for selecting a topology

Selecting an appropriate topology for your deployment environment depends upon several factors.

When you select a topology pattern, consider the following factors:
- Available hardware resources
- Application invocation patterns
- Types of business processes that you plan to implement (interruptible versus non-interruptible)
- How heavily you intend to use the Common Event Infrastructure (CEI)
- Individual scalability requirements
- Administrative effort involved

The IBM-supplied topologies can be applied to both Process Server and Process Center topologies. Therefore, your Process Center and Process Server network deployment environments can be organized in a similar way.

The procedures for creating environments for Process Server and Process Center based on IBM-supplied topologies are also similar. The only difference related to IBM-supplied patterns is the recommended patterns for a production environment, and the components configured on the clusters for those patterns.

For information on the components, features and functionality available in each of the IBM Business Process Manager configurations, see IBM Business Process Manager V7.5 configuration capabilities

Follow these tips regarding IBM-supplied topologies.
- For an IBM Process Server deployment environment, these topologies work best:
  – Remote Messaging, Remote Support, and Web - Four-cluster topology pattern

    Note: Do not use this pattern for a Standard configuration unless it includes IBM Business Monitor.
  – Remote Messaging and Remote Support - Three-cluster topology pattern
- For an IBM Process Center deployment environment, these topologies work best:
  – Single Cluster topology pattern
  – Remote Messaging - Two-cluster topology pattern

The pattern that you choose for your Process Server or Process Center network deployment environment must be based upon your unique requirements.

As you plan for your production environment, consider carefully the advantages and disadvantages of each of the common topology patterns.

Condensed topology pattern selection criteria

Consider the information listed in the following table, which is a quick guide to selecting your production topology. This table provides a condensed list of the advantages and disadvantages of each of the topology patterns.

For information about which BPM products support the supplied topology patterns, see *Topology patterns and supported BPM product features.*

Table 14. Considerations for selecting a topology for your deployment environment

Consideration	Topology Pattern			
	Single cluster	Remote Messaging	Remote Messaging and Remote Support	Remote Messaging, Remote Support and Web
Number of clusters to maintain	One cluster for all components	One cluster for applications and for the support infrastructure One cluster for messaging	One cluster for applications One cluster for the support infrastructure One cluster for the support infrastructure	One cluster for applications One cluster for Web interfaces One cluster for support infrastructure One cluster for messaging
Hardware requirements	Can be implemented on limited hardware	More hardware required for distributed environments	More hardware required for distributed environments	Most hardware intensive
Asynchronous interactions	Use should be minimal	Use must be balanced against resource availability	Ideal environment for asynchronous interactions	Ideal environment for asynchronous interactions
Long-running processes, state machines, and human tasks	Use should be minimal	Use must be balanced against resource availability	Ideal environment for interruptible processes, state machines, and human tasks	Ideal environment for interruptible processes, state machines, and human tasks
Heavy CEI activity	Not recommended (Light CEI use should be balanced against resource usage.)	Not recommended (Light CEI use should be balanced against resource usage.)	Ideal environment for heavy CEI use	Ideal environment for heavy CEI use
Administrative burden	Relatively small	Requires additional effort	Requires additional administrative effort	Requires most administrative effort
Scalability	All components scaled at the same rate	Messaging cluster scalability limited (no benefit beyond three servers) All other components scaled at the same rate	Easy to scale All functions separated Messaging cluster scalability still limited (no benefit beyond three servers)	Easiest to scale All functions separated Messaging cluster scalability still limited (benefit comes when other BPM products are introduced)

Related concepts:

"Topology patterns and supported product features"
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

"Topologies of a network deployment environment" on page 31
A topology is the physical layout of the deployment environment. You can create the topology that best addresses your business needs by choosing one of the patterns provided by IBM or by creating your own customized pattern.

Topology patterns and supported product features

A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

If you are using the Deployment Environment Configuration wizard on the administrative console to create the deployment environment, the availability of topology patterns on which you base your deployment environment varies depending on the following conditions and configuration decisions:

- The platform on which you have installed IBM Business Process Manager
- The primary deployment environment feature and the complimentary feature

The following table shows the relationship between the topology patterns and product features.

Table 15. Available supplied patterns and their relationship to product features

Topology pattern	Number of clusters	Description	Supported BPM products and features	Default status
Single Cluster	1	Messaging, application deployment target, and application support functions are contained in a single cluster. This topology pattern is useful for synchronous messaging, proof of concept, or application testing environments. A Single Cluster topology pattern is ideal for limited hardware. Because all of the components are installed in the same cluster, fewer physical machines are required.	Supported by the following products, or any combination of these products: • IBM Business Process Manager Advanced and Standard configurations • IBM Business Monitor	

Topology pattern	Number of clusters	Description	Supported BPM products and features	Default status
Remote Messaging	2	This topology pattern separates the messaging environment from the application deployment target and the application support functions. Use this topology pattern when message throughput is a critical requirement for your daily operation. This topology pattern is highly recommended for asynchronous messaging and transactional systems. In a Process Center network deployment environment, the Remote Messaging topology pattern is often enough to meet processing needs.	Supported by the following single product installations: • IBM Business Process Manager Advanced and Standard configurations	
Remote Messaging and Remote Support	3	This topology pattern separates messaging, Common Event Infrastructure (CEI), application deployment target, and application support functions into distinct clusters. Most businesses can use this topology pattern to support their deployment environments because it is designed for performance and isolation of transactional processing from messaging and other support functions.	Supported by the following single product installations: • IBM Business Process Manager Advanced and Standard configurations	This topology pattern is the default topology pattern for IBM Business Process Manager production environments. This topology pattern is the default topology pattern for the following installations: • IBM Business Process Manager Advanced (including deployment environments) • IBM Business Process Manager Standard
Remote Messaging, Remote Support, and Web	4	This topology pattern defines one cluster for application deployment, one remote cluster for the messaging infrastructure, one remote cluster for supporting applications, and one remote cluster for web application deployment (Business Process Choreographer Explorer, Business Space, and Business Rules Manager).	Supported by the following products, or any combination of these products: • IBM Business Process Manager Advanced and Standard configurations • IBM Business Monitor	This topology pattern is the default topology pattern for an IBM Business Monitor installation. For the Standard configuration, choose this pattern only if your topology includes IBM Business Monitor.

Configurable components for each configuration

When you install the various configurations of IBM Business Process Manager, certain components are visible to you during the installation and configuration process. For network deployment, these components can be in one cluster or in multiple clusters.

The following table shows the components for each of the different configurations.

Table 16. IBM Business Process Manager components

Component	Advanced	WebSphere ESB	Standard	Express
Process Server	X		X	X
Process Server messaging engine (service integration bus)	X		X	X
Performance Data Warehouse	X		X	X
Performance Data Warehouse messaging engine (service integration bus)	X		X	X
Common database	X	X		
Common event infrastructure (CEI) messaging engine (service integration bus)	X	X		
Service Component Architecture (SCA)	X	X		
SCA application messaging engine (service integration bus)	X	X		
Business Space	X	X		
Business Process Choreographer	X			
Business Process Choreographer messaging engine (service integration bus)	X			
Business Process Choreographer event collector	X			
Business Process Choreographer Explorer	X			

Related concepts:

"Considerations for selecting a topology" on page 41
Selecting an appropriate topology for your deployment environment depends upon several factors.

"Topologies of a network deployment environment" on page 31
A topology is the physical layout of the deployment environment. You can create the topology that best addresses your business needs by choosing one of the patterns provided by IBM or by creating your own customized pattern.

Determining whether to create a standardized or customized network deployment environment

There are two approaches to configuring your network deployment environment after profile creation. You can create a standardized network deployment environment based on IBM-supplied topology patterns, or you can create a customized network deployment environment to meet your unique business processing needs.

Reasons to create a standardized network deployment environment

If the IBM-supplied topology patterns (packaged as templates in IBM Business Process Manager) address all or most of your business processing needs, use the Deployment Environment wizard to create a standardized network deployment environment. The Deployment Environment wizard generates clusters and servers according to several predefined topology patterns, and configures multiple components across them all at the same time.

You should choose to create a standardized network deployment environment for one or more of the following reasons:

- You do not have a lot of experience using the features and functions of the administrative console required to create and configure servers, server clusters, and IBM Business Process Manager components.
- You want to configure multiple components by using a single wizard in the administration application.
- You want to import a database design file to provide the values for database-related resource definitions. For information on creating a database design file, see Creating database design files by using the database design tool.
- You have a predefined Deployment Environment that you can import into the current environment and customize, if necessary.

Reasons to create a customized network deployment environment

If the complexities of your business processing needs are not sufficiently met by any of the IBM-supplied topology patterns, use the features and functions of the administrative console to create a customized network deployment environment.

You might choose to create a customized network deployment environment for one or more of the following reasons:

- You are well-versed in using the administrative console to create deployment environments.
- You understand the concepts and component architecture required in a multi-clustered environment.
- You want to configure any clusters or servers upon which the components will be deployed *before configuring* the IBM Business Process Manager components themselves.

Load balancing and failover with IBM HTTP Server

In a network deployment environment, you can configure IBM HTTP Server as a proxy server for workload balancing and failover purposes. Instead of incoming HTTP requests going directly to an application server, they go to the proxy server, which then distributes the requests across multiple application servers that perform the work.

Although the specific configuration steps differ depending on your environment, the following general tasks can help you plan for and implement workload balancing and failover with IBM HTTP Server.

1. Review the information in Selecting a front end for your WebSphere Application Server topology to learn more about using a proxy server front end.
2. Implement a web server plugin. Install and configure the plugin as part of the local deployment manager profile. These WebSphere Application Server topics provide more information:
   - Implementing a web server plug-in
   - Installing and configuring web server plug-ins (refer to Scenario 5 in this topic)
3. Configure Secure Sockets Layer (SSL) between the deployment manager for WebSphere Application Server and the IBM HTTP Server administration server. You must configure the Application Server to accept a self-signed certificate from IBM HTTP Server so SSL connections are accepted and transactions are completed. See Configure SSL between the IBM HTTP Server Administration Server and the deployment manager for more information.
4. Customize the Process Server or Process Center cluster so that the configuration file points to the web server, the Process Server is in online mode, and communication is enabled for HTTP over SSL or HTTP Secure (HTTPs). See "Customizing the Process Server/Process Center cluster to work with a web server" on page 574.

Planning your database configuration

To plan your database configuration, you need to know which databases must be in place and configured in order to use the software, which components of IBM Business Process Manager you will use and their associated databases, the tasks required to administer the databases, and the security privileges of the database system that you are using.

Databases and your IBM Business Process Manager topology

A database configuration is part of the overall IBM Business Process Manager topology. For configuration activities, you must understand the differences between Process Center and Process Server databases as they relate to topology and runtime processing.

Although Process Center shares the same database schema, there are specific differences in the instance data that is stored. You must have a separate instance of the shared schema for each instance of Process Center and Process Server.

If you use the **Typical profile creation** option, the database design tool automatically generates SQL scripts for a default database configuration. If you create the stand-alone development profile (qesb) during installation, the required databases are configured automatically. You do not need to design the database requirements.

If you create database tables manually, use the database design tool to create the SQL scripts, because the tool ensures that the generated SQL scripts are unique.

You can incorporate configuration information for the database into the profile creation process by one of the following methods:

- Referencing a database design file
- Setting database configuration parameters with the Profile Management Tool or the `manageprofiles` command-line utility

Regardless of how you choose to implement your database configuration, you must generate the SQL scripts as part of the profile creation process. You cannot reuse SQL scripts between Process Servers or clusters of Process Servers.

Before they configure the databases, the solution architect and database administrator must collaborate on the database topology to understand the best way to store database tables. For example, will the tables be stored in the same database as the common database? Or will the tables be stored in a separate database as a stand-alone profile? Separate databases might be helpful because they simplify the database configuration. You might also use separate databases to tune and manage the component databases separately from the common database in a stand-alone server environment.

For more information about the database design tool, see Creating database design files using the database design tool.

Process Center database and Process Server database

IBM Business Process Manager Express and IBM Business Process Manager Standard include database configuration patterns, so you can create a database design for each runtime environment. You can use either pattern to create a database configuration for Process Server and Performance Data Warehouse Server components.

IBM Business Process Manager Advanced includes the same database configuration patterns, plus an additional pattern called **bpm.advanced.standalone.dbDesign**. You can use the **bpm.advanced.standalone.dbDesign** pattern as the database schema for the Process Server and Performance Data Warehouse server components in a common database. Use this pattern when you are

creating a stand-alone profile that combines the Process Server and Performance Data Warehouse runtime environments. If you use this pattern for a common database, a custom schema value is not specified.

You can also use the `procsry` and `pctrsry` database designs with the Deployment Environment wizard. For network deployment environments within the standard or advanced configurations, these patterns are part of the setup for the Process Server or Process Center on a deployment host.

Choosing how and when to configure the common database

You can create the required database tables either before or after configuring IBM Business Process Manager. The important thing to remember is that the databases (including their tables, schemas, and so on) must exist before the IBM Business Process Manager servers try to use them.

If you are planning to configure Business Process Choreographer, see Planning the topology, setup, and configuration path.

You can create the common database before, during, or after you create the IBM Business Process Manager profile.
* Before you configure IBM Business Process Manager:
  – Edit and run the default scripts that come with IBM Business Process Manager. You can use the default scripts to create only the common database and Business Process Choreographer tables.
  – Use the design file that was created using the database design tool (DDT). See Creating database design files by using the database design tool.
* After you configure IBM Business Process Manager:
  – Use the Profile Management Tool to configure IBM Business Process Manager to work with the tables in the database as you create the profile. You can create and configure the database tables during profile creation, or delay creation and configuration until after the profile has been created. Use the Profile Management Tool to generate database scripts that you can use to create and configure the database tables. These generated scripts are ready to use. No editing is required.
  – Use the design file that you created using the database design tool (DDT). See Creating database design files by using the database design tool.

Supported database types

Choosing a database depends on your operating system and on the features that you will use with IBM Business Process Manager.

See Table 17 on page 49 for a list of the databases that are supported with IBM Business Process Manager.

IBM Business Process Manager packages JDBC drivers for DB2, Oracle, and SQL Server. For information about the JDBC drivers (including version and level information), see the web page Detailed hardware and software requirements for IBM Business Process Manager.

Note: You are responsible for providing JDBC driver levels outside of what is packaged with IBM Business Process Manager.

The DB2 Express database is included in the IBM Business Process Manager software, and can be installed and configured automatically when you install IBM Business Process Manager. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system.

Important: ▆▆Linux▆▆ If you are installing DB2 Express as a root user, you must ensure that all kernel requirements are met before the DB2 Express installation begins. See http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=/com.ibm.db2.luw.qb.server.doc/doc/c0057140.html for a list of the kernel requirements. You can locate the current values by parsing the output of the **ipcs -l** command.

Note: Currently, there is a known limitation in DB2 Express installer related to the inclusion of national language (NL) strings in properties passed to it from the IBM Business Process Manager installer. The following values, which are passed to DB2 Express when it is being installed cannot have NL strings in them:

- `Linux` Instance user name and password: `bpminst` and `bpminst1`

- `Linux` Fenced user name and password: `bpmfenc` and `bpmfenc1`

- `Linux` Administration server (DAS) user name and Password: `bpmadmin` and `bpmadmin1`

- `Windows` Administrative user name and Password: `bpmadmin` and `bpmadmin1`

Each database is represented by a parameter *dbType* which is a character string. The *dbType* parameter is used as a parameter in **manageprofiles** command-line utility. The values of *dbType* for the supported databases are shown in Table 17.

Table 17. Supported database types, their associated dbType values and restrictions

Supported database	dbType value	Restrictions and notes
DB2 Express	DB2_UNIVERSAL	Used as the default database type for a stand-alone profile.
DB2® Universal	DB2_UNIVERSAL	

DB2 Data Server	DB2_DATASERVER	Available for download from:
		  9.7 GA level
		  Fixpacks

DB2 for z/OS	DB2UDBOS390	If you are using DB2 for z/OS as your database management system, you must configure the database and database objects by using the **createDB.sh** script. The installation wizard is not able to create a database of this type. .
Microsoft SQL Server	DataDirect Connect JDBC 4.0 = MSSQLSERVER_DATADIRECT Microsoft SQL Server JDBC 1.2 and 2.0 = MSSQLSERVER_MICROSOFT	Microsoft SQL Server JDBC 3.0 is also supported, though not listed as a separate database type on the Profile Management Tool. If you are using Microsoft SQL Server JDBC 3.0 as your database management system, selecting. a database type of Microsoft SQL Server JDBC 2.0 will support version 3.0Business Process Choreographer Explorer reporting function does not support this database type. **Note:** The Process Server and Performance Data Warehouse databases cannot be shared in the CommonDB. **Note:** If a locale different from Latin must be specified, then the **createDatabase.sql** script can not be used. A different locale that is case-insensitive must be specified. **Important:** You must configure XA transactions after the database is installed and before you start the server. Failure to configure the XA transactions can result in an error during server start up. See "Configuring XA transactions for Microsoft SQL Server" on page 360.
Oracle	ORACLE	The installation wizard is not able to create a database of this type for Oracle.

A second parameter used in file path and file naming conventions is *feature*, which indicates which of the various databases is under consideration. Table 18 lists the databases and the associated *feature* parameter.

Table 18. Databases and their associated feature name.

Database	Feature
Business Process Choreographer	ProcessChoreographer
Business Space	BusinessSpace
Process Server	ProcessServer
Performance Data Warehouse	PerformanceDW
Common database	CommonDB
Enterprise service bus logger mediation database	EsbLoggerMediation

When you install IBM Business Process Manager, database scripts are created in the following locations: *INSTALL_ROOT*/dbscripts/*feature*/dbType

Where *feature* can be:
*   BusinessSpace
*   CommonDB
*   EsbLoggerMediation
*   ProcessChoreographer
*   ProcessServer
*   PerformanceDW

The creation of most JDBC providers is performed during profile creation, based upon the database parameters that you provide. However, the Business Process Choreographer JDBC providers may be created later using scripts or the administrative console. If a suitable JDBC provider is located on the server or cluster, the existing JDBC provider is used and the creation of a new one is omitted.

Related concepts:

"JDBC drivers and locations" on page 51
The following table lists both the JDBC drivers that are shipped with your installation and those that are supported by the product.

Related information:

➡ Using a DB2 database to hold custom user registry data

Database naming restrictions

Databases cannot be reused across multiple installations of IBM Business Process Manager. Each installation of IBM Business Process Manager requires exclusive use of its associated databases. You must configure the databases so that they can be uniquely identified.

Depending on the installation path that you select, the databases associated with an installation might be configured with default names. For example, the databases associated with IBM Business Process Manager Advanced on IBM DB2 have the following defaults:
*   Process Server - BPMDB
*   Common database - CMNDB
*   Performance Data Warehouse - PDWDB

If you have two installations of IBM Business Process Manager Advanced that use DB2, you must select, for one of the installations, an installation path that lets you specify the names instead of accepting the default values.

To ensure the uniqueness of the database names, select installation paths that prompt you for the database names.

For example, you are prompted for the database names when you use the Typical installation path. Select the option to use an existing database server instead of the default DB2 Express.

Note: When you use the Profile Management Tool to create a profile after installation, you are prompted for database names, no matter which path in the Profile Management Tool (Typical or Advanced) you choose. The only exception is when you use a database design file for your database configuration. The database design file contains the database names, user name, and password information. Thus, the Profile Management Tool does not prompt you for this information.

In contrast, you are not prompted for database names in the following cases:

- You are using the Custom installation path for the IBM Business Process Manager Advanced Process Server image. Installation Manager provides an option to create the profile, but assigns default values to the database names.
- You are using the Typical installation path and you choose to install DB2 Express, which is packaged with the installation images. Database names are assigned the default values.

Additional restrictions apply to database naming. These restrictions depend on the database server that you are using.

IBM Business Process Manager Advanced Advanced installation

For IBM DB2 and Microsoft SQL Server databases, the following restrictions apply:

- The Process Server, Performance Data Warehouse, and Common database components must be in separate databases.
- The Process Server and Performance Data Warehouse components do not support case-sensitive databases. These databases must be case-insensitive.

For Microsoft SQL Server databases, components other than Process Server or Performance Data Warehouse require that their databases be case-sensitive.

For Oracle databases, the Process Server, Performance Data Warehouse, and Common database components must use a separate schema/user. They can use the same instance.

JDBC drivers and locations

The following table lists both the JDBC drivers that are shipped with your installation and those that are supported by the product.

The following JDBC drivers are shipped with the installation image.

Table 19. Shipped JDBC drivers and locations

Server	Driver description	Driver location	Comments
DB2	IBM DB2 Universal JDBC Driver 3.61.65	WAS_HOME/jdbcdrivers/DB2	IBM DB2 Universal JDBC Driver is the default DB2 driver for distributed and z/OS.
	IBM Data Server Driver for JDBC and SQLJ 4.11.69		
Oracle	Oracle JDBC Driver 11g 11.2.0.1.0	WAS_HOME/jdbcdrivers/Oracle	
SQL Server	Microsoft SQL Server JDBC Driver 2.0	WAS_HOME/jdbcdrivers/SQL Server	Microsoft SQL Server JDBC Driver 2.0 supports SQL Server 1.2, 2.0, and 3.0.

The following JDBC drivers are also supported, but are not included with the installation image.

Table 20. Supported JDBC drivers and locations

Server	Driver description
Oracle	Oracle JDBC Driver 11g 11.1.0.6
SQL Server	Microsoft SQL Server JDBC Driver 1.2
	Microsoft SQL Server JDBC Driver 3.0
	Progress DataDirect SQL Server Driver

Related concepts:

"Supported database types" on page 48
Choosing a database depends on your operating system and on the features that you will use with IBM Business Process Manager.

Related information:

➡ Detailed hardware and software requirements for IBM Business Process Manager Advanced

Identifying required database administrator tasks

If you want to perform some types of database creation and configuration tasks in IBM Business Process Manager, you must be a database administrator (DBA).

Database selection

Choosing how to configure your database

Database privileges and security considerations

- "Database privileges" on page 53
- Identifying necessary security authorizations

Profile creation

- Prerequisites for creating or augmenting profiles
- Creating a stand-alone environment
- Configuring the software after a Custom installation to create one or more Deployment manager and Custom (managed node) profiles
-

  Tip: If you use the deployment environment feature, you can use a database other than the default database server as your database product. The user ID that you provide for the **User name to authenticate with the database** field on the database configuration panels must have DBA privileges.

Database configuration

- Create the database and tables before profile creation or augmentation
  - Creating database design files by using the database design tool
- Create the database and tables after profile creation or augmentation
  - Creating the Common database and tables after profile creation or augmentation
  - Creating database design files by using the database design tool
- "Planning to configure the messaging engine database" on page 120

Relevant links

- Configuring Business Process Choreographer
- Configuring Business Space
- Configuring IBM Business Monitor
  - Database considerations
  - Installing the database

Nonadministrative user considerations

If you are installing IBM Business Process Manager as a nonadministrative or nonroot user and you want to create a test profile during installation, you must have the DB2 server installed before you begin the installation. Remember the database details so that you can enter them during the installation.

The considerations described in this topic apply to any install scenario where you choose to install using the **Typical** install option. Profiles are created automatically when you install using the **Typical** option.

Note: Test profiles apply only for use with an IBM BPM Advanced configuration.

To install as a nonadministrative user, you have the following choices:

- Before installing the product, install a DB2 server separately. For information about installing DB2 as a nonadministrative or nonroot user, see

  - `Linux` `UNIX` Non-root installation overview (Linux and UNIX)

  - `Windows` Required user accounts for installation of DB2 server products (Windows)

- Logon as an administrator and use the product installer to install the DB2 server alone. Grant special permission to the nonadministrative user. Then logon as the nonadministrative user and install the product using the installed DB2 server.

Alternatively, instead of creating a test profile, you can create a profile after installation (this is the case for any install using the **Custom** install option). Use these steps:

1. Install the product without creating a profile. When you install as a nonadministrative user, on the Install Packages page, you must clear the check box for DB2 Express. On Windows, if you have the option to install IBM Cognos Business Intelligence, you must clear that check box as well.
2. On the Features page, expand the servers and make sure that none of the test profiles are selected.
3. Use the Profile Management Tool to create a stand-alone profile, or to create the deployment manager and the custom profiles. If you do not have a database installed, use the **Advanced** path for all. Do not use the **Typical** path. Select the option to delay the execution of the database scripts during profile creation.
4. If the databases were not created in advance. have the database administrator create the databases and tables after profile creation or augmentation.
5. For a network deployment:
   a. Federate the custom profiles to the deployment manager.
   b. Using the administrative console, create the required deployment environment

Note: If you choose to use the DB2 Express database included (and optionally installed) with the product, you must meet the following criteria:

- Uninstall any other versions of DB2 from the system
- Install IBM Business Process Manager as a nonadministrative or nonroot user

Database privileges

Set database privileges to determine the authority that you must have to create or access your data store tables for each supported database management system.

When you create schemas with the installer, Profile Management Tool, database design tool, or scripts, your user ID must have the authority to create tables. When the tables are created, you must have the authority to select, insert, update, and delete information in the tables.

The following table describes the database privileges that are needed to access the data stores.

Table 21. Database privileges

Header	Minimum privileges required to create objects in the database	Minimum privileges required to access objects in the database
DB2	The user ID needs CREATETAB authority on the database and CREATETS to create the table space. The user ID also needs CREATEIN and DROPIN privilege on the schema. The user ID needs system privileges CREATEDBA and CREATEDBC. The user ID also needs ALTER, DELETE, INDEX, INSERT, REFERENCES, SELECT, and UPDATE privileges on the created tables.	The user ID needs SELECT, INSERT, UPDATE, and DELETE privileges on the tables. The user ID also needs EXECUTE ON PROCEDURE on stored procedures. Refer to Table 22 on page 55 for detailed DB2 database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.
DB2 for z/OS	The user ID needs CREATETAB authority on the database and CREATETS to create the table space. The user ID also needs CREATEIN and DROPIN privilege on the schema. To create storage groups for the database, the user ID needs CREATESG, CREATEDBA, and CREATEDBC system privileges. The user ID also needs ALTER, DELETE, INDEX, INSERT, REFERENCES, SELECT, and UPDATE privileges on the created tables.	The user ID needs SELECT, INSERT, UPDATE, and DELETE privileges on the tables. The user ID also needs EXECUTE ON PROCEDURE on stored procedures. Refer to Table 23 on page 56 for detailed DB2 for z/OS database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.
Oracle	The user ID needs sufficient privilege to create relational tables and indexes in the data store schema. The database also needs a space quota in the default table space of the owner of that schema.	The user ID needs the SESSION privilege to connect to the database. If the same user ID owns both the data store schema, and the component that is connecting to the database, the user ID has sufficient privilege to manipulate the tables. Otherwise, the user ID needs SELECT, INSERT, UPDATE, ALTER, and DELETE object privileges on the tables that make up the data store, and the DROP ANY TABLE system privilege to enable the use of the TRUNCATE TABLE statement. The user ID also requires the CREATE INDEX privilege. You must create the Oracle database using a UTF-8 character set, which supports the other customer character sets that are supported by IBM Business Process Manager. See Table 24 on page 57 for detailed Oracle database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.

Table 21. Database privileges (continued)

Header	Minimum privileges required to create objects in the database	Minimum privileges required to access objects in the database
SQL Server	The user ID ideally requires DB OWNER privileges on the data stores used for IBM Business Process Manager.	Configure the SQL Server for SQL Server and Windows authentication so that authentication to be based on an SQL server login ID and password. The user ID must be the owner of the tables, or a member of a group that has sufficient authority to issue TRUNCATE TABLE statements. See Table 25 on page 58 for detailed SQL Server database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.

Table 22 describes additional DB2 database privileges for IBM Business Process Manager components.

Table 22. Detailed DB2 database privileges

Component	Installation privileges	Runtime privileges
Common DB	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, USAGE ON SEQUENCE
Business Space	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT
Messaging Engines	CREATE TABLE, CREATE INDEXTYPE	SELECT, UPDATE, DELETE, INSERT, DROP ANY TABLE **Note:** Messaging Engines use the TRUNCATE TABLE SQL statement, which may require the DROP ANY TABLE privilege. Refer to Database privileges.

Table 22. Detailed DB2 database privileges (continued)

Component	Installation privileges	Runtime privileges
Process Server Performance Data Warehouse	Required to create the database: • CREATEDBA • CREATEDBC Required to populate the database with our schemas and stored procedures: • CREATETAB • CREATEIN • DROPIN Additional required privileges on the created tables: • ALTER • DELETE • INDEX • INSERT • REFERENCES • SELECT • UPDATE	Required privileges on the tables in the Process Server and Performance Data Warehouse databases: • DELETE • INSERT • SELECT • UPDATE The runtime user must have EXECUTE ON PROCEDURE privileges on the six stored procedures in the `createProcedure_ProcessServer.sql` script. The runtime user requires all of the above listed privileges on the Performance Tracking Server database as well. In addition, the user also must be able to create new tables in the Performance Tracking database, requiring the CREATETAB privilege. To read the system metadata tables, the SELECT permission is required on **syscat.tables**, **syscat.views**, **syscat.columns**, **syscat.tabconst**, and **sysibm.sysdummy1**.

Table 23 describes additional DB2 for z/OS database privileges for IBM Business Process Manager components.

Table 23. Detailed DB2 for z/OS database privileges

Component	Installation privileges	Runtime privileges
Common DB	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, USAGE ON SEQUENCE
Business Space	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, USAGE ON SEQUENCE
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT
Messaging Engines	CREATE TABLE, CREATE INDEXTYPE	SELECT, UPDATE, DELETE, INSERT, DROP ANY TABLE **Note:** Messaging Engines use the TRUNCATE TABLE SQL statement, which may require the DROP ANY TABLE privilege. Refer to Database privileges.

Table 23. Detailed DB2 for z/OS database privileges (continued)

Component	Installation privileges	Runtime privileges
Process Server Performance Data Warehouse	Required to create the database: • CREATESG • CREATEDBA • CREATEDBC Required to populate the database with our schemas and stored procedures: • CREATETS • CREATETAB • CREATEIN • DROPIN Additional required privileges on the created tables: • ALTER • DELETE • INDEX • INSERT • REFERENCES • SELECT • UPDATE	Required privileges on the tables in the Process Server and Performance Data Warehouse databases: • DELETE • INSERT • SELECT • UPDATE The runtime user must have EXECUTE ON PROCEDURE privileges on the six stored procedures in the `createProcedure_ProcessServer.sql` script. The runtime user requires all of the above listed privileges on the Performance Tracking Server database as well. In addition, the user also must be able to create new tables in the Performance Tracking database, requiring the CREATETS and CREATETAB privileges. To read the system metadata tables, the SELECT permission is required on **sysibm.systables**, **sysibm.sysviews**, **sysibm.syscolumns**, **sysibm.syschecks**, **sysibm.sysrels**, **sysibm.systabconst**, **sysibm.systablespace**, and, **sysibm.sysdummy1**.

Table 24 describes additional Oracle database privileges for IBM Business Process Manager components.

Important: If you configure all the following components for a single Oracle database, you can create a superset of all the privileges that are specified for each component. If you configure the four components for numerous databases, you can set different privileges for each.

Table 24. Detailed Oracle database privileges

Component	Installation privileges	Runtime privileges
Common DB	CREATE TABLE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE
Business Space	CREATE TABLE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT

Table 24. Detailed Oracle database privileges (continued)

Component	Installation privileges	Runtime privileges
Common Event Infrastructure (CEI)	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, CREATE VIEW, ALTER SESSION, SELECT, UPDATE, DELETE, INSERT, CREATE TABLESPACE, CREATE PROFILE CREATE ROLE, CREATE PROCEDURE, CREATE TEMPORARY TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE PROCEDURE
Messaging Engines	CREATE TABLE	SELECT, UPDATE, DELETE, INSERT, DROP ANY TABLE **Note:** Messaging Engines use the TRUNCATE TABLE SQL statement, which may require the DROP ANY TABLE privilege. Refer to Database privileges.
Process Server	CREATE TABLE, SELECT, INSERT, UPDATE, ALTER LOCK TABLE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE VIEW, DROP VIEW, CREATE PROCEDURE, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, DROP TABLE, DROP VIEW, CREATE SEQUENCE
Performance Data Warehouse	CREATE TABLE, SELECT, INSERT, UPDATE, ALTER LOCK TABLE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE VIEW, DROP VIEW, CREATE PROCEDURE, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, DROP TABLE, DROP VIEW, CREATE SEQUENCE All schemas or users creating or migrating IBM BPM profiles must have access to the **DBMS_LOCK** package. Set the **Execute** permission on the **DBMS_LOCK** package for the Oracle user or schema using the performance database as shown in the following example: `GRANT execute ON DBMS_LOCK TO <schema_name>` In this example, *schema_name* is the user ID that is used for the performance database.

Table 25 describes additional SQL Server database privileges for IBM Business Process Manager components.

Table 25. Detailed SQL Server database privileges

Component	Installation privileges	Runtime privileges
Common DB	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE
Business Space	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE

Table 25. Detailed SQL Server database privileges (continued)

Component	Installation privileges	Runtime privileges
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT
Messaging Engines	CREATE TABLE, CREATE INDEXTYPE	SELECT, UPDATE, DELETE, INSERT, DROP ANY TABLE **Note:** Messaging Engines use the TRUNCATE TABLE SQL statement, which may require the DROP ANY TABLE privilege. Refer to Database privileges.
Process Server	CREATE TABLE, SELECT, INSERT, UPDATE, ALTER LOCK TABLE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE INDEXTYPE, CREATE VIEW, DROP VIEW, CREATE PROCEDURE, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, DROP TABLE, DROP VIEW, CREATE SEQUENCE
Performance Data Warehouse	CREATE TABLE, SELECT, INSERT, UPDATE, ALTER LOCK TABLE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE INDEXTYPE, CREATE VIEW, DROP VIEW, CREATE PROCEDURE, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, DROP TABLE, DROP VIEW, CREATE SEQUENCE

For more information, see the WebSphere Application Server page in the related reference.

Preparing necessary security authorizations

Depending on your security policy, you might need a user ID and password to complete tasks such as creating files and folders and accessing the database. Prepare secure user IDs to prevent problems when the servers attempt to access protected data.

- Complete the design of your database.
- Determine the authentication system to use, for example, Lightweight Directory Access Protocol (LDAP).
- Determine what controls are in place that affect the authorizations required for your IBM Business Process Manager installation.
- Identify the systems on which you are installing the product.

The security policies for your site enables global security which indicates that you require specific authorities to install software, create databases or tables, or access databases. To successfully install and operate the product you must do these steps.

To prepare security authorizations for an IBM Business Process Manager database, complete the following steps:

- Prepare a list of user IDs and passwords that have authority to install software on the systems. You must run the installation wizards for IBM Business Process Manager user IDs that have the authority to create files and folders.

- Prepare a list of user IDs, passwords, and roles that are needed for daily operations of the system:
  - Administrative console user IDs and roles to limit capabilities. You can have user IDs for configuring, administering, or monitoring roles.
  - User IDs for each system bus to authenticate system communications.
  - Administrative and monitoring user IDs or groups for each Business Process Choreographer container for authentication with Business Flow Manager and Human Task Manager.
  - User IDs or groups for synchronous calls to authenticate with Business Flow Manager and Human Task Manager.
- Prepare a list of user IDs and passwords that the system uses to access the database tables that it uses during operation.
- Optional: Prepare a list of user IDs and passwords that the system uses to create databases or database tables during installation. Your site policies might restrict this authority to the database administrator. In this case, you must provide generated scripts to the administrator to create the databases or database tables.

You can install and operate your servers in a secure environment.

Installation directories for the product and profiles

The installation directories for IBM Business Process Manager are represented by several variables. The meaning of those variables can differ for a number of factors.

Variables used in the documentation

Several variables representing specific default directories are used throughout the documentation. These file paths are default locations. You can install the product and other components and create profiles in any directory for which you have write access. Multiple installations of IBM Business Process Manager products or components require multiple locations.

Here are the main variables used in the documentation:

Linux **UNIX** **Windows** *install_root*

Installation location of IBM Business Process Manager. IBM Business Process Manager is always installed in the same location as the WebSphere Application Server Network Deployment installation with which it is associated.

profile_root

Location of a IBM Business Process Manager profile.

How variable meanings can differ

The meaning of variables used to represent installation directories can differ based on whether you are installing the product on a clean workstation or on a workstation that has an existing installation of WebSphere Application Server or WebSphere Application Server Network Deployment. The variables can also differ depending on whether you are performing the installation as a root (Administrator on a Windows system) or nonroot user.

Linux **UNIX** **Windows**
Limitations of nonroot installers

Root, Administrator, and nonroot users can install the product. The default directories the installation program provides differ based on whether the user has root (Administrator) privileges. Root and Administrator users can register shared products and install into system-owned directories (globally shared resources that are available to all users), while nonroot users cannot. Nonroot users can install only into directories they own.

Default directories for Typical Installation

The following tables show the default installation locations of the IBM Business Process Manager base installation and its profiles during a typical installation.

Table 26 shows the default installation root directory into which the installation program installs both IBM Business Process Manager and WebSphere Application Server Network Deployment for both root (Administrator) and nonroot users.

Table 26. install_root default directory

Default *install_root* for root or Administrator users	Default *install_root* for nonroot users
AIX `/opt/IBM/BPM/v7.5`	AIX `user_home/IBM/BPM/v7.5`
Linux `/opt/ibm/BPM/v7.5`	Linux `user_home/ibm/BPM/v7.5C:\IBM\BPM\v7.5`
Windows `C:\IBM\BPM\v7.5`	Windows `C:\IBM\BPM\v7.5`

Table 27 shows the default installation directory for a profile named *profile_name* for both root (Administrator) and nonroot users.

Table 27. profile_root default directory

Default *profile_root* for root or Administrator users	Default *profile_root* for nonroot users
AIX `/opt/IBM/BPM/v7.5/profiles/profile_name`	AIX `user_homeIBM/BPM/v7.5/profiles/profile_name`
Linux `/opt/ibm/BPM/v7.5/profiles/profile_name`	Linux `user_home/ibm/BPM/v7.5/profiles/profile_name`
Windows `C:\IBM\BPM\v7.5\profiles\profile_name`	Windows `C:\IBM\BPM\v7.5\profiles\profile_name`

Table 28 shows the DB2 Express install location. DB2 Express is installed under the same directory as IBM Business Process Manager.

Table 28. DB2 Express default directory

Default DB2 Express binary location	Database Instance location
Linux `/opt/ibm/BPM/v7.5/DB2`	Linux Database instance is created under the `bpminst` user. For example: `user_home/bpminst`
Windows `C:\IBM\BPM\v7.5\DB2`	Windows The BPMINST database instance is created under the root (\) of the drive where IBM Business Process Manager is installed. For example, if IBM Business Process Manager is installed under `C:\IBM\BPM\v7.5\` then you will see `C:\BPMINST`.

Default directories for Custom Installation or existing installation of WebSphere Application Server or WebSphere Application Server Network Deployment

The following tables show the default installation locations of the product and its profiles. If you choose to install IBM Business Process Manager on top of an existing supported version of WebSphere Application Server or WebSphere Application Server Network Deployment, IBM Business Process Manager is installed into the same location. Table 29 on page 62 shows the default installation root directory in such a case for both root (Administrator) and nonroot users.

Table 29. shows the default installation root directory into which the installation program installs both IBM Business Process Manager and WebSphere Application Server for both root (Administrator) and nonroot users.

Default *install_root* for root or Administrator users	Default *install_root* for nonroot users
AIX `/usr/IBM/WebSphere/AppServer`	AIX `user_home/IBM/WebSphere/AppServer`
Linux Solaris `/opt/IBM/WebSphere/AppServer`	Linux Solaris `user_home/IBM/WebSphere/AppServer`
Windows `C:\Program Files\IBM\WebSphere\AppServer`	Windows `user_home\IBM\WebSphere\AppServer`

Table 30. shows the default installation directory for a profile named profile_name for both root (Administrator) and nonroot users.

Default *profile_root* for root or Administrator users	Default *profile_root* for nonroot users
AIX `/usr/IBM/WebSphere/AppServer/profiles/profile_name`	AIX `user_home/IBM/WebSphere/AppServer/profiles/profile_name`
Linux Solaris `/opt/IBM/WebSphere/AppServer/profiles/profile_name`	Linux Solaris `user_home/IBM/WebSphere/AppServer/profiles/profile_name`
Windows `C:\Program Files\IBM\WebSphere\AppServer\profiles\profile_name`	Windows `user_home\IBM\WebSphere\AppServer\profiles\profile_name`

Default installation directories for Installation Manager

Table 31 shows two default directories related to the Installation Manager tool.

The directories under **Installation directory** are the defaults (per platform) into which the launchpad application installs Installation Manager.

The directories under **Agent data location directory** are the defaults (per platform) used by Installation Manager for data associated with the application, such as the state and history of operations performed by Installation Manager.

Values are given for both root (Administrator) and nonroot users.

For more information about the Agent data location, see Agent data location in the Installation Manager documentation. For more information on other defaults for Installation Manager, see Installing as an administrator or non-administrator in the Installation Manager documentation.

Table 31. Installation Manager default installation directories

Defaults for root or Administrator users	Defaults for nonroot users
Installation directory:	**Installation directory:**
Linux `/opt/IBM/InstallationManager/eclipse`	Linux `user_home/IBM/InstallationManager/eclipse`
UNIX `/opt/IBM/InstallationManager/eclipse`	UNIX `user_home/IBM/InstallationManager/eclipse`
Windows `C:\Program Files\IBM\Installation Manager\eclipse`	Windows `C:\Documents and Settings\userID\IBM\Installation Manager\eclipse` Vista Windows 7 `C:\ProgramData\IBM\Installation Manager`
Agent data location directory:	**Agent data location directory:**
Linux `/var/ibm/InstallationManager`	Linux `user_home/var/ibm/InstallationManager`

Table 31. Installation Manager default installation directories (continued)

Defaults for root or Administrator users	Defaults for nonroot users
UNIX /var/ibm/InstallationManager	**UNIX** *user_home*/var/ibm/InstallationManager
Windows C:\Documents and Settings\All Users\Application Data\IBM\Installation Manager	**Windows** C:\Documents and Settings*userID*\ Application Data\IBM\Installation Manager
Vista **Windows 7** C:\ProgramData\IBM\ Installation Manager	**Vista** **Windows 7** C:\Users*userID*\AppData\ Roaming\IBM\Installation Manager

Planning your component-specific database configurations

IBM Business Process Manager includes components that require database tables and specific names of the databases where the tables are stored.

Use the information in this section to familiarize yourself with IBM Business Process Manager components that your database administrator must manage, configure, and administer.

To plan your database configuration, you must know the components that you will use. Table 32 lists the IBM Business Process Manager components that require a database table, and the default names of the databases where the tables associated with these components are stored.

Important: You can change these names if you choose, but you must remember to use the names consistently in later configuration steps.

Table 32. Databases that are required by individual components

Server component	Database (default name)	Notes
Application scheduler	CMNDB (the common database)	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables either during the startup of the deployment manager or stand-alone server or before you start the deployment manager or stand-alone server.
Business Process Choreographer	BPEDB	You must create the BPEDB before you start a server or cluster with Business Process Choreographer configured.

Table 32. Databases that are required by individual components (continued)

Server component	Database (default name)	Notes
Business Process Choreographer Explorer reporting function	OBSRVDB	You can use the Business Process Choreographer Explorer reporting function to create reports on processes that are completed. You can use a separate database for Business Process Choreographer Explorer reporting and default the name to OBSRVDB. You must create the OBSRVDB before you start a server or cluster with Business Process Choreographer Explorer or Business Process Choreographer Event Collector configured. For production environments, set up dedicated databases. For instance, use BPEDB as the database for the Business Process Choreographer and use the OBSRVDB as the database for Business Process Choreographer Explorer reporting data.
Business Space	CMNDB (the common database)	For stand-alone profiles, you must create the common database before you start IBM Business Process Manager. For other profiles, you must use the administrative console to configure Business Space. Configuring a Business Space database is mandatory for using Business Space powered by WebSphere, which provides a common interface for application users to create, manage, and integrate web interfaces across a range of IBM products.
Common Event Infrastructure (CEI)	EVENT (stores events)	CEI database configuration is not supported by the Profile Management Tool or the `manageprofile` command-line utility. The Common Base Event browser relies on the CEI database. If you want to use the Common Base Event browser to retrieve and view logging, tracing, management, and business events in your business enterprise applications, you must create the CEI database manually.
Enterprise service bus	CMNDB (the common database)	You must configure these tables either during startup of the deployment manager or stand-alone server or before you start the deployment manager or stand-alone server.

Table 32. Databases that are required by individual components (continued)

Server component	Database (default name)	Notes
Mediation	CMNDB (the common database)	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables either during the startup of the deployment manager or stand-alone server or before you start the deployment manager or stand-alone server.
Recovery	CMNDB (the common database)	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables either during the startup of the deployment manager or stand-alone server or before you start the deployment manager or stand-alone server.
Relationships	CMNDB (the common database)	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables before or during the startup of the deployment manager or stand-alone server.
Selectors and business rules	CMNDB (the common database)/Repository DB	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables before or during the startup of the deployment manager or stand-alone server.
SIBus	User created	You must configure these tables during the startup of the messaging engine or before you start the messaging engine. You can use a file store with SIBus in a stand-alone environment during profile creation. However, you cannot use a file store with SIBus in a network deployment environment.

Planning to configure the common database

The common database configurations contain information about supported database types, script names and their locations, profile creation configuration actions, installation parameters, types of created tables, and user ID privileges.

The IBM Business Process Manager common database is used by the following product components:
- Recovery
- Relationship service
- Mediation
- Application Scheduler
- Customization (selector and business rule group)
- EventSequencing (LockManager)
- Enterprise Service Bus (ESB) Logger Mediation Primitive

You can create the common database before, during, or after you create the IBM Business Process Manager profile.

- Before you configure IBM Business Process Manager:
  - Edit and run the default scripts that come with IBM Business Process Manager. You can use the default scripts to create only the common database and Business Process Choreographer tables.
  - Use the design file that was created using the database design tool (DDT). See Creating database design files by using the database design tool.
- After you configure IBM Business Process Manager:
  - Use the Profile Management Tool to configure IBM Business Process Manager to work with the tables in the database as you create the profile. You can create and configure the database tables during profile creation, or delay creation and configuration until after the profile has been created. Use the Profile Management Tool to generate database scripts that you can use to create and configure the database tables. These generated scripts are ready to use. No editing is required.
  - Use the design file that you created using the database design tool (DDT). See Creating database design files by using the database design tool.

Supported database types

The common database can use the following database products:

Table 33. Supported database products

Database Types	Considerations
DB2 Express®	Used as the default database type for a stand-alone profile.
DB2 Universal	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 Data Server	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 for z/OS v8 DB2 for z/OS v9	**Important:** When creating a profile for a server that uses DB2 for z/OS v9, the server must be able to connect to the DB2 database.Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
Microsoft SQL Server (DataDirect)	
Microsoft SQL Server (Microsoft)	
Oracle	You need system database administrator privileges to create the database, tables, and schemas. If you do not have these privileges, you might receive errors when you create or access the tables and schemas.

User ID privileges

The user credentials that you provide in the Profile Management Tool must have the permissions necessary to create table spaces, tables, schemas, indexes, and stored procedures. For the **Create new database** option, the user ID must have the necessary privileges to create a database. If the user who is running the script has the authority to create tables, the script does not require an authentication ID within the script. For more information, see "Users and schemas for databases" and "Database privileges".

Database Management Service instances

For a network deployment environment, there is one set of common database tables per cell.

Configuration actions during profile creation

You can use one of the following options to install the common database:

- Installer
- Profile Management Tool
- Silent installation
- Scripts

Within each of these options are several more choices.

Installer

Use the Installer if you are going to create your profiles when you install your software. You can install your database products during installation, but you are limited in the types of database products that you can install. To use a supported database product that is not in Table 34, you must use the Profile Management Tool to create your deployment manager.

Table 34. Installer options

Option	Databases you can use
Typical: stand-alone profile	DB2 Express
Typical: all other profiles	DB2 Express
Customized: stand-alone profile	• DB2 Universal • DB2 Data Server • Oracle
Customized: all other profiles	• DB2 Universal • DB2 Data Server • Oracle

A typical installation uses default values for configuration parameters and you cannot change these defaults. If you choose a customized installation, you can change the defaults for your specific requirements.

Profile Management Tool

Use the Profile Management Tool to create profiles after you install your software. The Profile Management Tool allows you the options of installing your database before, during or after profile creation.

Table 35 on page 68 lists the databases supported by typical (default) profiles and customized profiles.

Table 35. Profile Management Tool options

Options	Databases you can use
Typical: stand-alone profile	• DB2 DataServer • DB2 Universal • DB2 for z/OS • Microsoft SQL Server • Oracle DB2 for z/OS, Oracle and Microsoft SQL databases must exist so that the Profile Management Tool can configure them.
Typical: all other profiles	• DB2 DataServer • DB2 Universal • DB2 for z/OS • Microsoft SQL Server • Oracle DB2 for z/OS, Oracle and Microsoft SQL databases must exist so that the Profile Management Tool can configure them.
Customized: stand-alone profile	Any of the "Supported database types" on page 66
Customized: all other profiles	Any of the "Supported database types" on page 66

Silent Installations

When you install the product silently, you can specify the common database configuration by editing the template response file.

Scripts

You can use scripts to create your common database before you install IBM Business Process Manager or during profile creation.

If you choose to configure your database manually after profile creation, you must first install IBM Business Process Manager and indicate in the Profile Management Tool that you do not want to run the scripts as part of profile creation. The Profile Management Tool updates the default scripts with the database parameters that you specify, and writes updated scripts out to the *profile_root*/dbscripts/CommonDB/*dbType*/*dbName* directory.

Tip: You can use the Profile Management Tool to change the directory to which updated scripts are written.

The scripts are ready to run, but you can edit them to include any specific requirements. You can then give these scripts to the person who should create your common database. If you try to start IBM Business Process Manager before creating the database, you receive an error message.

When you run the scripts, you also perform the following tasks:

• Create a database, if appropriate (valid only for a local database), depending on your choices in the Database configuration panel in the Profile Management Tool.

Important: Although you can defer creating the database until the profile creation is complete, you must enter valid information in the Database configuration panel of the Profile Management Tool. This information is used to create the data source for the IBM Business Process Manager.

• Create the data source on the JDBC provider.

Important: If you create the database at the same time as the profile, and if you introduce mistakes in the database parameters, errors occur in the profile. If you delay creating the database, the profile is created without errors, but the generated database scripts contain errors and you must correct them before you can create the database. For custom (managed) nodes of a cell, you must select the same database type as the deployment manager profile. The data source is maintained only at the cell level.

Note: For custom (managed) nodes of a cell, you must select the same database type as the deployment manager profile. The data source is maintained only at the cell level.

SQL scripts

Use SQL scripts to configure your database before or after you create the profile. Tables are created with a deployment manager profile so no SQL scripts are executed while the managed node is created.

You can find SQL scripts for each common database client in the following locations:
- `media_root/dbscripts` on your product media
- `install_root/dbscripts/CommonDB/dbType` after you install IBM Business Process Manager

If you choose to defer creation of the database after you create the profile, you can find the updated scripts in the `profile_root/dbscripts/feature/dbType/dbName` directory.

The SQL script naming convention is:
- For a component-specific script: **createTable_*componentName*.sql**, for example **createTable_Recovery.sql**
- For a component-independent script: **createTable.sql**.

The following table shows the script naming convention.

Table 36. Common database script naming convention

Type of script	Script name
Component specific	*scriptName_componentName*.sql
Component independent	*scriptName*.sql

JDBC provider

A new Java Database Connectivity (JDBC) provider is created depending on the database type. The provider is created in the node scope in a stand-alone profile and at the cell level in a network deployment environment. The JDBC provider refers to the **JDBC_DRIVER_PATH** variable to locate local JDBC drivers. The variable is specified at the cell level and each node level points to the correct local path.

Data source name:
- **WPS DataSource**

Data source JNDI name:
- **jdbc/WPSDB**

Restrictions

Several restrictions exist for the database commands that are available during profile creation.

Create new database is disabled for the following database types:
- DB2 for z/OS

- Oracle
- Microsoft SQL Server

Tables

The common database scripts create only static tables during profile creation. The following table contains a list of all the tables that are created by different components.

Table 37. Tables created by IBM Business Process Manager components

Component	Table names	Scripts
Recovery	FAILEDEVENTS FAILEDEVENTBOTYPES FAILEDEVENTMESSAGE	**createTable_Recovery.sql**
Mediation	MEDIATION_TICKETS	**createTable_mediation.sql**
Relationship	Dynamic table, created at runtime	**createTable_Relationship MetadataTable.sql**
Application Scheduler	WSCH_LMGR WSCH_ LMPR WSCH_TASK WSCH_TREG	**createTable_AppScheduler.sql**
Customization (selector/business rule group)	BYTESTORE BYTESTOREOVERFLOW APPTIMESTAMP	**createTable_customization.sql**
Common database	SchemaVersionInfo	**createTable_CommonDB.sql**
Persistent LockManager	PERSISTENTLOCK	**createTable_lockmanager.sql**
ESB Logger Mediation	MSGLOG	**createTable_ESBLogger Mediation.sql**

All the SQL scripts in the previous table are executed by the `commonDBUtility.ant` file from each component script, such as **configRecovery** > **commonDBUtility** > **execute createTable_Recovery.sql**. When the value **delayConfig=true** is in the response file, the SQL files are created, but they are not run. In this case, you must run the SQL manually after the configuration.

In the WebSphere Enterprise Bus Logger Mediation component, you can configure each message logger primitive to use a different data source and a different database.

Exported scripts

Scripts are created for any option that you selected on the Profile Management Tool panel to configure the common database. The scripts contain only basic creation statements for databases, tables, and indexes. The database administrator must use database native commands to execute these scripts. For more information, see "Configuring the common database using the Profile Management Tool".

The names of the scripts are `configCommonDB.bat` for Windows, and `configCommonDB.sh` for UNIX-based operating systems.

Database scripts are exported to the

profile_root/dbscripts/CommonDB/*dbType*/*dbName* directory.

Planning to configure the Common Event Infrastructure database
The Common Event Infrastructure (CEI) database specifications list the types of supported databases, script locations, profile configuration types, and necessary user ID privileges. You can optionally use the CEI database to store events that are captured when it is monitoring IBM Business Process Manager.

The CEI database is an internal device and you do not interact directly with it. You must use the supported CEI programming interfaces for all interactions with the CEI database.

When you run the Profile Management Tool, you do not automatically create the CEI database. If you want to store CEI events, you must create the database manually for a stand-alone profile and for each instance of a CEI server in a network deployment environment.

Related tasks:

"Configuring a CEI database" on page 545
You can configure a Common Event Infrastructure (CEI) database manually and use the CEI functionality for IBM Business Process Manager.

Planning to configure Business Process Choreographer

Plan your Business Process Choreographer setup, configuration parameters, and Business Process Archive.

1. Perform "Planning the topology, setup, and configuration path" on page 81.
2. Depending on your chosen configuration path, perform one of the following:
   - For "Basic sample", perform "Planning to create a basic sample Business Process Choreographer configuration" on page 86.
   - For "Sample with organization", perform "Planning to create a sample Business Process Choreographer configuration including a sample organization" on page 86.
   - For "Production deployment environment", perform "Planning to use the administrative console's deployment environment wizard" on page 87.
   - For "Flexible custom configuration", perform "Planning for a custom Business Process Choreographer configuration" on page 90.
   - For "Business Process Archive", perform "Planning for the Business Process Archive" on page 114.

You have planned everything you need to be able to perform "Configuring Business Process Choreographer" on page 424.

Related concepts:

"Business Process Choreographer overview"
Describes the facilities provided by the Business Flow Manager, Human Task Manager, and Business Process Archive Manager.

Business Process Choreographer overview:

Describes the facilities provided by the Business Flow Manager, Human Task Manager, and Business Process Archive Manager.

Business Process Choreographer is an enterprise workflow engine that supports both BPEL processes and human tasks in a WebSphere Application Server environment. These constructs can be used to orchestrate services as well as integrate activities that involve people in business processes. Business Process Choreographer manages the life cycle of BPEL processes and human tasks, navigates through the associated model, and invokes the appropriate services.

Business Process Choreographer provides the following facilities:

- Support for BPEL processes and human tasks. Allows you to model your business process using the Web Services Business Process Execution Language (WS-BPEL, abbreviated to BPEL). With human tasks, you can use the Task Execution Language (TEL) to model activities that involve people. Both BPEL processes and human tasks are exposed as services in a service-oriented architecture (SOA) or Service Component Architecture (SCA); they also support simple data objects and business objects.
- Application programming interfaces for developing customized applications for interacting with BPEL processes and human tasks.

- Human workflow widgets as part of Business Space. These widgets allow you to manage work, create tasks for other people, and initiate services and processes.
- Business Process Choreographer Explorer. This Web application allows you to administer BPEL processes and human tasks.

  It also includes the optional Business Process Choreographer Explorer reporting function, formerly known as the Business Process Choreographer Observer, which allows you to observe the states of running processes. The Business Process Choreographer Explorer reporting functionality is deprecated. To monitor and report on BPEL processes, use IBM Business Monitor.
- Business Process Archive Manager. When configured, this provides a separate database, to which completed process instances and human tasks can be moved by running an administrative script. This can help to maintain the performance of your Business Process Choreographer database. An API is also available so that you can create your own client that can work with archived instances.

  The Business Process Archive Explorer is a Web application that allows users to browse or delete instances that have been moved to the archive database. For more information, see "BPEL process archiving overview" on page 75.

  By reusing a reporting database that was configured for the Business Process Choreographer Explorer reporting function, the Business Process Archive Explorer can also be configured to provide the reporting function. The Business Process Archive Explorer reporting functionality is deprecated. To monitor and report on BPEL processes, use IBM Business Monitor.
- By default, new Business Process Choreographer configurations benefit from the performance improvements resulting from using shared work items.

Related tasks:
Planning to configure Business Process Choreographer
Plan your Business Process Choreographer setup, configuration parameters, and Business Process Archive.

Business Process Choreographer Explorer overview:

Business Process Choreographer Explorer is a web application that implements a generic web user interface for interacting with BPEL processes and human tasks.

It also includes an optional reporting function, which was previously known as the Business Process Choreographer Observer.

You can configure one or more Business Process Choreographer Explorer instances on a server or cluster. To connect a client such as the Business Process Choreographer Explorer to a Business Process Choreographer configuration, it is sufficient to have a Process Server installation with a WebSphere profile, or a Process Server client installation – it is not necessary to have Business Process Choreographer configured on the server or cluster. The Process Server client installation is the only infrastructure that you need.

The client installation does not include the Business Process Choreographer Explorer. You can use the deployment manager, administrative console, or an administrative script to install the Business Process Choreographer Explorer on the servers in the Process Server client installation as well.

A single Business Process Choreographer Explorer can only connect to one Business Process Choreographer configuration, though it does not have to connect to a local configuration. However, you can configure multiple instances of the Business Process Choreographer Explorer on the same server or cluster, and each instance can connect to a different Business Process Choreographer configuration.

When you start Business Process Choreographer Explorer, the objects that you see in the user interface and the actions that you can take depend on the user group that you belong to and the authorization granted to that group. For example, if you are a business process administrator, you are responsible for the smooth operation of deployed BPEL processes. You can view information about process and task

templates, process instances, task instances, and their associated objects. You can also act on these objects; for example, you can start new process instances, create and start tasks, repair and restart failed activities, manage work items, and delete completed process instances and task instances. However, if you are a user, you can view and act on only those tasks that have been assigned to you.

You cannot use the Business Process Choreographer Explorer to view instances that have been moved to a Business Process Archive database. That requires a Business Process Archive Explorer instance that connects to the Business Process Archive Manager configuration. For more information about archiving see "BPEL process archiving overview" on page 75.

Business Process Choreographer Explorer reporting function overview (deprecated):

About Business Process Choreographer Explorer reporting function.

The Business Process Choreographer Explorer reporting functionality is deprecated. To monitor and report on BPEL processes, use IBM Business Monitor.

You can use the Business Process Choreographer Explorer reporting function to create reports on processes that have been completed. You can also use it to view the status of running processes. This describes the architecture and possible configuration paths.

The Business Process Choreographer Explorer reporting function uses the Common Event Infrastructure (CEI) to collect events. You can either use a number of predefined reports or define your own reports to get an overview of the number of processes, activities, or other aggregate data. You can also get information about specific processes or activities.

The Business Process Choreographer Explorer reporting function is based on two Java Platform Enterprise Edition (Java EE) applications, which are shown in the following figure:
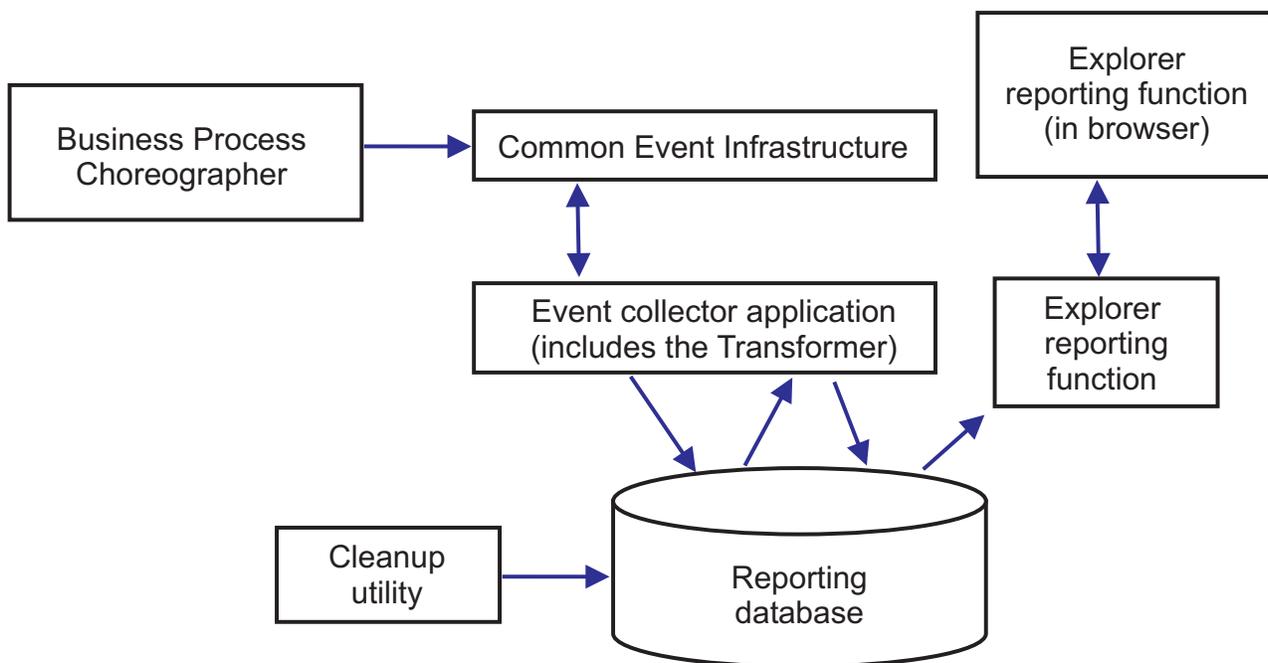
Figure 7. Architecture

- The event collector application reads event information from the CEI bus and stores it in the event collector table in the reporting database.
- The reporting database is a set of database tables that store the event data.

- Periodically the event transformer is triggered, which transforms the raw event data into a format that is suitable for queries from the Business Process Choreographer Explorer reporting function.
- The Business Process Choreographer Explorer reporting function generates the reports and performs other actions that the user can initiate using the graphical user interface (GUI).
- You can use the GUI to generate your reports. You can also store and retrieve reports that you have defined.
- A cleanup utility can be used to remove records from the database, which can help to improve the performance.
- The Business Process Archive Explorer also supports the reporting function, and can be setup to use the same reporting function infrastructure that has been created for use with the Business Process Choreographer Explorer.

Simple configurations

A simple configuration, where performance is not an important consideration is illustrated in the following figure.
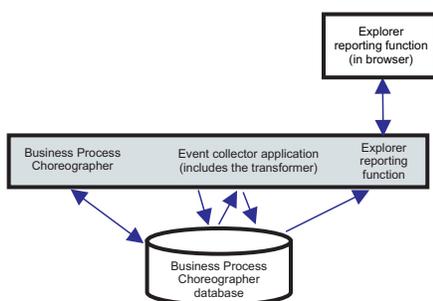
Figure 8. Stand-alone setup

Everything is deployed on a single system, and Business Process Choreographer and Business Process Choreographer Explorer reporting function use the same database.

This kind of simple configuration is created if you create a sample Business Process Choreographer configuration. Also the bpeconfig.jacl tool defaults to configuring this kind of setup on the same deployment target as the Business Process Choreographer configuration. Common Event Infrastructure (CEI) logging will be enabled and the necessary database schema is created in the default Business Process Choreographer database BPEDB. This configuration path can be ideal if performance is not an important consideration.

High-performance configurations

Interactive configuration tools are provided which give you the freedom to exploit the full potential of the Business Process Choreographer Explorer reporting function architecture. For example, in an ideal configuration for performance, the Business Process Choreographer configuration, CEI event server, and the Business Process Choreographer Explorer (with reporting function) run on separate systems, and Business Process Choreographer and the Business Process Choreographer Explorer reporting function have their own databases.
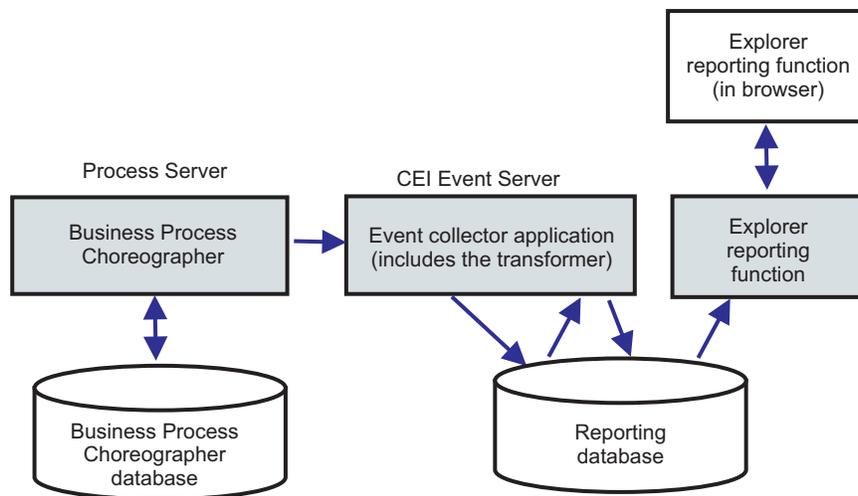
Figure 9. Business Process Choreographer Explorer reporting setup for production performance

If you want to use a separate database for the Business Process Choreographer Explorer reporting function, or to add the Business Process Choreographer Explorer reporting function to an existing Business Process Choreographer configuration in a clustered setup, or to use more sophisticated database options, perform "Configuring the Business Process Choreographer Explorer reporting function and event collector" on page 488.

In a network deployment environment

The following constraints apply if you want to configure Business Process Choreographer Explorer reporting function in a network deployment environment.

- CEI must be configured in your cell.
- As illustrated in the previous figure, the Business Process Choreographer event collector must be configured on a deployment target where the CEI Event server is configured. If the CEI Event server is configured on a different cluster than Business Process Choreographer, you must configure the Business Process Choreographer event collector on a deployment target where the CEI Event server is configured. The Business Process Choreographer Explorer reporting function application does not need to be deployed on the same system as the event collector.

BPEL process archiving overview:

If you configure the Business Process Archive Manager, you use a script to move completed process instances and human tasks from the Business Process Choreographer database to an archive database.

By regularly performing archiving, you can prevent the runtime database from filling up with old objects, which over time, can degrade the database performance. You can use a Business Process Archive Explorer or the Business Process Archive Manager API to access processes and tasks that were moved to the archive database. Because it is not possible to move data from an archive database back to a runtime database, using this archiving facility does not provide any backup protection.

Architecture

The business process archiving facility consists of the following elements:

- Business Process Archive Manager
- Business Process Archive database
- The archive.py script
- Business Process Archive Explorer

- Business Process Archive Manager EJB API

Business Process Archive Manager

The Business Process Archive Manager must be configured before you can use it. The following conditions apply:

- Business Process Archive Manager must be configured in a network deployment environment and requires Service Component Architecture (SCA) and messaging services.
- A Business Process Choreographer configuration can only use Business Process Archive Manager configurations that are in the same cell.
- A Business Process Archive Manager configuration can only be used to archive data from one Business Process Choreographer configuration.
- Each Business Process Archive Manager configuration must have its own Business Process Archive database.
- A deployment target can only have one configuration of either Business Process Archive Manager or Business Process Choreographer.
- Applications that contain BPEL processes or human tasks cannot be deployed to a deployment target that is configured with the Business Process Archive Manager.
- For each Business Process Choreographer configuration, you can have one or more Business Process Archive Manager configurations.

Minimum configuration

The following figure illustrates using one Business Process Archive Manager configuration for a Business Process Choreographer configuration. This setup is sufficient to prevent database performance problems caused by the runtime database filling up with completed instances. Both configurations must be in the same cell.
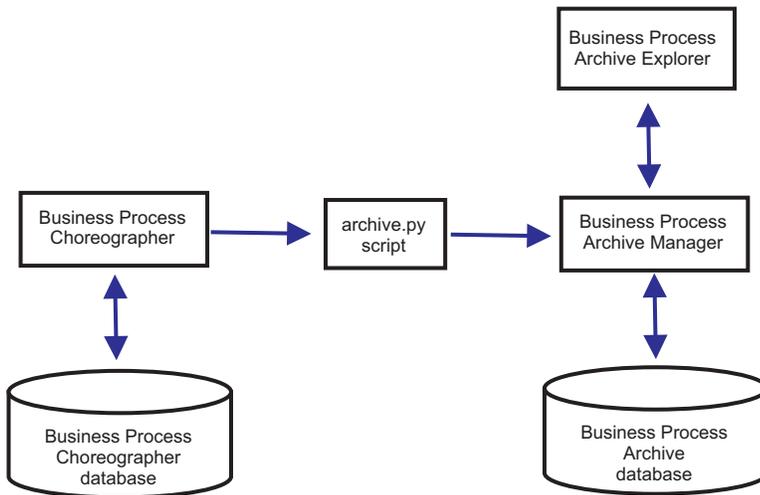
Figure 10. Business Process Choreographer using one Business Process Archive

Multiple configurations

It is also possible to use multiple Business Process Archives to archive the instances from a Business Process Choreographer configuration.
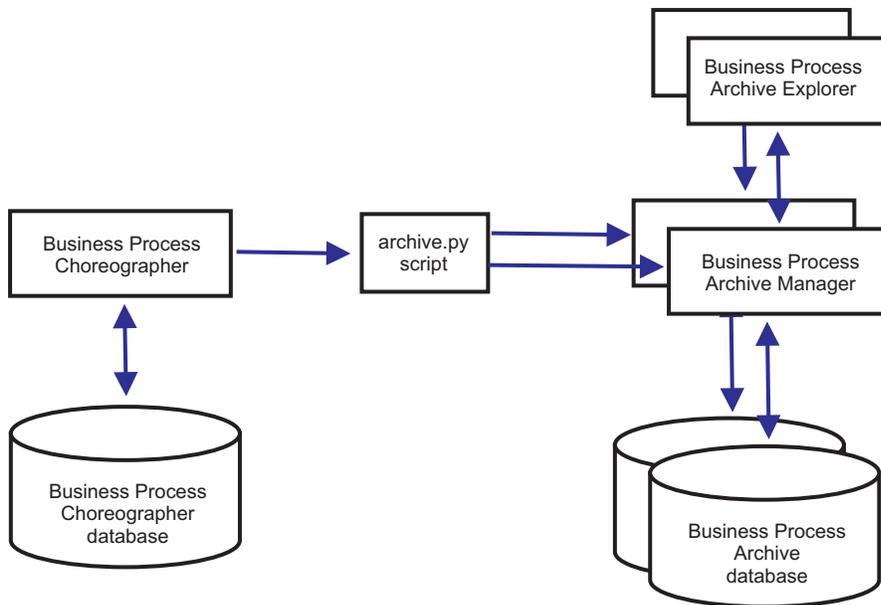
Figure 11. Business Process Choreographer using two Business Process Archives

>For example, if different departments work with different BPEL processes, it might make sense to have an archive per department, and move completed instances of each departments' business processes to their own archive, so that the members of one department cannot access the archived process instances of another department.

>**Note:** Using more than one Business Process Archive will not improve the performance of archiving operations.

Business Process Archive database

Each Business Process Archive Manager requires its own database. The database must be of the same type and structure as is used for the Business Process Choreographer database. The default name for the archive database is BPARCDB.

The archive.py administrative script

A WebSphere system administrator can run this script to archive data from the runtime database of one Business Process Choreographer configuration to the archive database of a Business Process Archive Manager configuration. Various parameters can be specified to control which instances will be archived, how many to archive in total, and how many to archive in each database transaction. The source and destination are specified by their deployment servers or clusters. For more information about this script, see Archiving completed BPEL process and task instances.

Restriction: The following restrictions apply:

- You cannot transfer objects from an archive database back to a Business Process Choreographer database, nor to another archive.
- The first time that you archive instances to a new archive database, the identity of the Business Process Choreographer configuration is written to the database, and in future, only instances from that configuration can be archived to that archive database.
- When instances are successfully moved to the archive, they are deleted from the Business Process Choreographer database, which generates a deletion event for the common event infrastructure (CEI) and the audit log. But it is not possible to identify that the deletion event was caused by an archiving action rather than by some other delete action, for example, cleanup service, user initiated delete action, delete script, or automatic deletion after successful completion.

- You cannot archive to different archives at the same time. Parallel invocations of the archive.py script are serialized.
- You cannot archive a process instance that has the same process name as any other process instance in the archiving database.
- You cannot archive a process instance that has the same values for its correlation set as another process instance in the archiving database.
- If you archive instances of a process template, then undeploy and redeploy the identical process template with the valid from date unchanged, you cannot archive any new instances of that process template to the same archive database. This is not an issue for normal process template versioning, where a different valid from date is used.

However, even if one of the above restriction prevents you from archiving certain process instances to one archive database, you can archive those process instances to a different archive database, for which the restriction conditions are not true.

Business Process Archive Manager EJB API support

Only a subset of the actions that are available using the Business Flow Manager and Human Task Manager EJB APIs can also be used against a Business Process Archive Manager configuration to perform read and delete operations on process instances and human tasks that are in the associated archive database. The other APIs are not supported by the Business Process Archive Manager.

A new method, **OperationMode getOperationMode()** is provided, which indicates whether the client is connected to a Business Process Choreographer configuration or a Business Process Archive Manager configuration. This can be used to write custom clients that can connect to and operate appropriately on runtime configurations and archive configurations.

For more information about the Business Process Archive Manager API refer to the JavaDoc for the packages com.ibm.bpe.api and com.ibm.task.api.

Business Process Archive Explorer

The Business Process Archive Explorer is very similar to the Business Process Choreographer Explorer except that it connects to an archive database associated with a Business Process Archive Manager configuration. Like the Process Choreographer Explorer, the Business Process Archive Explorer must be configured before it can be used. If you configure the reporting function for a Business Process Choreographer Explorer instance, a Business Process Archive Explorer instance can use the same reporting database.

There are two ways to configure a Business Process Archive Explorer:

- If you run the bpeconfig.jacl script to create a Business Process Archive Manager configuration, there is an option to also configure a Business Process Archive Explorer instance on the same deployment target.
- If you only want to configure a Business Process Archive Explorer instance, you can run the clientconfig.jacl script interactively, or in batch mode using the **-operationMode ARCHIVE** option.

Depending on your authorization, you can use the Business Process Archive Explorer to browse instances and possibly delete instances too. You cannot update instances or create new instances.

Authorization

The actions that can be performed using the Business Process Archive Manager EJB API or the Business Process Archive Explorer depends on the following Java Platform, Enterprise Edition (Java EE) roles:

- Users who are in the Business Process Archive Manager system monitor role can read and view all process instances and all task instances in the archive database.
- Users who are in the Business Process Archive Manager system administrator role can also delete any top-level process instances and top-level task instances in the archive database.

- Users who are neither in the system monitor nor the system administrator roles can only see instances that they created or started themselves, but they cannot view any details about the instances.
- No one (not even users in the system administrator roles) can modify any of the data associated with any instances in the archive database.
- Instance-based authorization information, such as the potential owner or reader information, is not archived. Therefore, this data is not available in the archive. The only exception to this is the information about the starter and creator of processes and tasks.
- Users must be in the **WebClientUser** role to use the Business Process Archive Explorer.

Which data is archived

Only top-level process instances and top-level standalone human task instances that have reached one of the end states (**Finished**, **Terminated**, **Failed**, or **Expired**) can be moved to the archive database. When a top-level instance is archived, certain data is also moved with it to the archive, and other data is deleted.

For completed top-level process instances, including business state machine instances:
- Instance data such as activities, variables, inline human tasks, input messages, and output messages are moved.
- Child processes and related data are moved recursively.
- If any related metadata such as process templates and task templates are not already in the archive database, a copy of them is created.
- Query tables and stored queries are neither moved nor copied to the archive database.
- Work items associated with an archived instance are deleted without being archived.

For completed top-level standalone human tasks:
- Instance data such as input messages and output messages are moved.
- Escalation instances are moved.
- Child tasks including follow-on tasks are moved.
- If related metadata such as task templates are not already in the archive database, a copy of them is created.
- Work items associated with an archived instance are deleted without being archived.

Metadata
Additional metadata, such as process and task template information, is copied to the archive when necessary, to allow the archived data to be interpreted and displayed correctly. The metadata in the archive database is deleted when it is no longer required, that is, when the last process instance or human task that references the metadata is deleted.

What is not archived
Other Business Process Choreographer data, such as configuration data, XSD and WSDL artefacts, SCA modules, applications, work baskets, business categories, business rules, messages, audit trail data, and data in the reporting database, cannot be moved to the archive.

Overview of configuring a business process archive

If you want to configure a business process archive, you must plan to perform the following steps:
1. Perform "Planning for the Business Process Archive" on page 114.
2. Ensure that all the prerequisites are met:
   - The Business Process Choreographer configuration that the archive will be connected to must already be working.
   - The deployment target for the business process archive must already exist, and not have a Business Process Choreographer or Business Process Archive Manager configuration on it.

Important: The Service Component Architecture (SCA) on this deployment target must be configured to use the identical values for **Bus Member Location**, **Database Instance**, and **Schema** as the SCA configuration on the deployment target of the associated Business Process Choreographer configuration. This allows it to share the existing messaging infrastructure.

3. Run the bpeconfig.jacl script.

   You can only create a Business Process Archive Manager configuration using the bpeconfig.jacl script. The script can also create the first Business Process Archive Explorer configuration on the same deployment target. If you want further Business Process Archive Explorer configurations (on the same or different deployment target) you must use the clientconfig.jacl script.

4. If the Business Process Archive database does not already exist, it must be created before the Business Process Archive Manager is started.

5. Restart the server or cluster where the Business Process Archive Manager is configured.

6. Verify that the archiving facility works:

   - If you have configured the Business Process Choreographer Explorer, use it to identify some BPEL process instances or human task instances that are in an end state that you want to move to the archive database.

   - Run the archive.py script to move some completed BPEL process instances or human task instances to the archive.

   - Direct a browser to the URL for the Business Process Archive Explorer to verify that the instances are in the archive.

Shared work items:

Using shared work items is an optimization to improve the performance of database queries and reduce the database input/output. If you create a new Business Process Choreographer configuration, it automatically uses shared work items. If you migrated your Business Process Choreographer configuration using shared work items is optional.

What are shared work items?

Work items are created in the Business Process Choreographer database for each combination of human task instance and all people who are permitted to perform actions on that instance. If the number of human task instances and the number of users increases significantly, the number of work items in the database can grow so large that the database performance is affected.

The idea behind shared work items is an optimized implementation of work items, such that redundant information about work items is not stored in the database. This can improve the performance of many BPEL process and human task queries. Whether shared work items are being used, or not, is transparent to the users of Business Process Choreographer APIs.

How to decide whether to add support for shared work items

It is only if you migrate your Business Process Choreographer configuration from Version 7.0.0.2 or earlier, that the support for shared work items is not activated. Although activating is optional, certain factors indicate that using shared work items will improve performance.

- If you only have hundreds or a few thousands of human task instances in your system, there is probably little or no performance advantage in migrating to using shared work items.
- If you have hundreds of thousands of human task instances in your system, and your task list and process list queries are taking too long, migrating to using shared work items should improve the performance.
- Using shared work items can improve the performance of the following queries:
  - query()
  - queryAll()

- queryEntities()
- queryEntityCount()
- queryRows()
- queryRowCount()

Restrictions

Some queries can only be resolved using the non-shared work items. This means that enabling support for shared work items will not improve the performance of the following types of queries:
- Queries that run against the WORK_ITEM view exclusively.
- Queries that reference one or more of the following columns in the WORK_ITEM view:
  - ASSOC_OBJECT_TYPE
  - ASSOC_OID
  - OBJECT_ID
  - CREATION_TIME
  - OBJECT_TYPE
- Queries referencing a custom table that is directly joined with the WORK_ITEM view.
- Queries that were created as materialized views.
- Queries that use authorization with inherited work items.

Planning the topology, setup, and configuration path:

Your choice of topology and setup affects which Business Process Choreographer configuration paths you can use.

The different configuration paths vary in complexity, flexibility, and their support for different topologies and databases.
1. Be aware that you must choose between several different configuration paths for creating a Business Process Choreographer configuration.
   - The "Basic sample" only includes the following:
     - Business Process Choreographer runtime configuration.
     - Business Process Choreographer Explorer with reporting function.
     - A Business Process Choreographer event collector for the reporting function.
   - The "Sample with organization" also includes the following:
     - A people directory that is preconfigured with 15 users in a sample organization.
     - Substitution and group work items are enabled.
   - "Production deployment environment"
   - "Flexible custom configuration"

   For most configuration paths, you have a choice of configuration tools.

   Note: An additional "Business Process Archive" configuration path only configures a Business Process Archive Manager.
2. Be aware of the different configuration tools that you can use to configure Business Process Choreographer.

   Installer
   > The Installer provides an easy way to create a non-production system.
   > - The combination of a typical install and using DB2 for the common database is one way to get the "Basic sample" Business Process Choreographer configuration.

- The combination of a custom install and using DB2 Express for the common database is the only way to get the "Sample with organization" Business Process Choreographer configuration

Profile Management Tool

Profile Management Tool provides two ways to create a non-production system with a"Basic sample" Business Process Choreographer configuration.

- If you use DB2 for the common database, creating a typical profile for a Process Server or a Process Center will include a "Basic sample" Business Process Choreographer configuration.

- Creating an advanced profile and selecting the Business Process Choreographer option includes the "Basic sample" Business Process Choreographer configuration, which can use any supported database.

Administrative console's deployment environment wizard

Can be used to create a "Production deployment environment" Business Process Choreographer configuration, based on a deployment environment pattern.

Administrative console's Business Process Choreographer configuration page

You can use this administrative console page to configure a "Flexible custom configuration" Business Process Choreographer production system on a server or cluster. It provides the opportunity to set many configuration parameters, which need detailed planning. This page does not configure the Business Process Choreographer Explorer, which you can configure using its own configuration page in the administrative console, or by running a script. This configuration path is most suitable for creating production systems.

bpeconfig.jacl configuration script

You can use this script to configure a "Flexible custom configuration" Business Process Choreographer production system and all the necessary resources on a given server or cluster. You can run the script interactively, or if you provide all the necessary parameters, it can run in batch mode for repeatable automation. It can create a local database, the necessary messaging resources, and can optionally configure the Business Process Choreographer Explorer, which includes the Business Process Choreographer Explorer reporting function. For some database systems, it can also create a remote database. This configuration path is most suitable for creating production systems.

You can also use this script to configure a Business Process Archive Manager, but not on the same deployment target where Business Process Choreographer is configured.

clientconfig.jacl configuration script

You can use this script to configure one of the following:

- A Business Process Choreographer Explorer, optionally with the reporting function.
- A Business Process Archive Explorer, optionally with the reporting function.

3. Be aware that some of the configuration paths have restrictions that limit their suitability for production systems: For example:

- If you create a Business Process Choreographer configuration that uses the common CMNDB database, it will not be suitable for a high-performance system.

- After experimenting with one of the sample configurations, if you want to use the same profile to create a new configuration that is suitable for a production system, you must remove the sample configuration first. If you want to keep your sample configuration, you must create one or more separate profiles for the production setup.

4. If you were familiar with the Business Process Choreographer Observer up to version 6.1.2, be aware that it is now integrated in the Business Process Choreographer Explorer. It is now referred to as the Business Process Choreographer Explorer reporting function, and it can be accessed using the **Reports** tab in the Business Process Choreographer Explorer client. The reporting function uses the same URL as the Business Process Choreographer Explorer.

When configuring the Business Process Choreographer Explorer in the administrative console, or using the bpeconfig.jacl configuration script or clientconfig.jacl configuration script there is an option to configure the Business Process Choreographer Explorer reporting function.

If you migrated an existing Business Process Choreographer configuration, any Business Process Choreographer Observer configuration is not migrated. To use the Business Process Choreographer Explorer reporting function you must enable it, as described in "Enabling the Business Process Choreographer Explorer reporting function after migration" on page 516.

5. Identify the main criteria for deciding which configuration path to use. Use the following table to identify choices and constraints:

Table 38. Criteria for selecting a configuration path

Choices				Restrictions	Suitable configuration path
Are you planning a production system?	**What is the deploy-ment target?**	**Type of Business Process Choreographer configuration**	**Can it use a separate database?**	**Which message stores are supported for the messaging engine?**	**Configuration path name and possible configuration tools**
No	Stand-alone server	Basic sample (without the sample organization)	Yes, the BPEDB database can be any supported database.	Only the shared DB2 CMNDB database	**"Basic sample"** using the Profile Management Tool to create an advanced Process Server or Process Center profile, and select the Business Process Choreographer option.
			No, the BPEDB database is created (using the schema name BPEDB) in the common database, CMNDB, which can only be DB2.		**"Basic sample"** using the Profile Management Tool to create a typical Process Server or Process Center profile.
					"Basic sample" using the Installer to create a typical installation of Process Server or Process Center
		Sample including a 15 person organization, and substitution is enabled.	No, the BPEDB database is created (using the schema name BPEDB) in the common database, CMNDB, which can only be DB2 Express.		**"Sample with organization"** using the Installer to create a custom install of the Process Server.

Table 38. Criteria for selecting a configuration path (continued)

Choices			Restrictions		Suitable configuration path
Are you planning a production system?	**What is the deploy-ment target?**	**Type of Business Process Choreographer configuration**	**Can it use a separate database?**	**Which message stores are supported for the messaging engine?**	**Configuration path name and possible configuration tools**
Yes	Cluster	Choice of deployment environment patterns: • Single Cluster • Remote Messaging • Remote Messaging, Remote Support, and Web • Remote Messaging and Remote Support	Yes, the BPEDB database can be any supported database.	Any supported database.	**"Production deployment environment"** using the Administrative Console.
	Stand-alone server	Flexible custom configuration			**"Flexible custom configuration"** using one of: • bpeconfig.jacl script • Administrative console Business Process Choreographer configuration page
Yes	Any network deployment server or cluster where Business Process Choreographer is not configured.	Business Process Archive	The BPARCDB archive database must be separate from the BPEDB database. It must be of the same database type that is used by the Business Process Choreographer configuration.	Does not have its own messaging engine. Uses the same messaging engine as the Business Process Choreographer configuration.	**"Business Process Archive"** using: • bpeconfig.jacl script to configure a Business Process Archive Manager.

Note: It is also possible to use any of the configuration paths that are recommended for creating a production system to create a configuration that is not suitable for a production system. Consider the following options:

a. Decide whether you are configuring a production system. Typically a production system requires high-performance, scalability, and security. For Business Process Choreographer, a production system should have its own BPEDB database.

b. Decide whether the deployment target for the Business Process Choreographer will be a stand-alone server or a cluster.

c. If you do not want to create a production system, decide whether a sample configuration on a stand-alone server will meet your needs. If so, decide whether you want the sample to include a sample people directory (populated with a sample organization) for people assignment and substitution enabled.

   Note: The sample people directory uses the default file registry configured for the federated repositories, and includes all sample people with the same password "wid". The WebSphere administration user ID is also added to the directory, using the password that was specified during profile creation. After the sample configuration has been created, you can use the administrative console to view which users and groups are available by clicking **Users and Groups**, then either **Manage Users** or **Manage Groups**.

d. If you want to configure Business Process Choreographer on a cluster, depending on your performance requirements, decide whether the messaging engines and supporting applications, (such as the Business Process Choreographer Explorer and Common Event Infrastructure) will have their own cluster, or share one. The standard deployment environment patterns are:

   Single cluster
   The single cluster pattern is the simplest pattern. It defines one application deployment target cluster, which includes the messaging infrastructure and supporting applications.

   Remote Messaging
   The remote messaging pattern defines one cluster for application deployment and one remote cluster for the messaging infrastructure. The supporting applications are configured on the application deployment target cluster.

   Remote Messaging, Remote Support, and Web
   The remote messaging, remote support, and Web pattern defines one cluster for application deployment; one remote cluster for the messaging infrastructure; one remote cluster for the supporting applications; and one cluster for Business Space and REST services related Web applications.

   Remote Messaging and Remote Support
   The remote messaging and remote support pattern defines one cluster for application deployment, one remote cluster for the messaging infrastructure, and one remote cluster for the supporting applications.

e. For a production system, plan to have a dedicated BPEDB database for Business Process Choreographer.

f. Business Process Choreographer will use the same database as a message store that is used by SCA. Business Process Choreographer will use its own schema in the same database.

6. If you want to use the Business Process Choreographer Explorer reporting function, which is integrated in the Business Process Choreographer Explorer, you can either configure it at the same time as you create a Business Process Choreographer configuration, or you can create it later. Decide whether Business Process Choreographer Explorer reporting function will also use the BPEDB database, or whether it will have its own, OBSRVRDB, database. Also plan the topology for the Business Process Choreographer Explorer reporting function components. To perform the detailed planning now, perform "Planning the Planning the Business Process Choreographer Explorer reporting function (deprecated)" on page 111.

7. If you want to use the Business Process Archive Manager to move completed process instances and human tasks from the BPEDB database to an archive database, you must configure it on a deployment target where Business Process Choreographer is not configured. To perform the detailed planning now, perform "Planning for the Business Process Archive" on page 114.

8. If you want WebSphere Portal Server or a custom IBM Business Process Manager Advanced client to access Business Process Choreographer, perform "Planning for a remote client application" on page 119.

9. If you have application security enabled and you have a long-running process that calls a remote EJB method, Common Secure Interoperability Version 2 (CSIv2) identity assertion must be enabled when you configure CSIv2 inbound authentication.

10. If you will use human tasks, then WebSphere administrative security and application security must both be enabled.

You have planned the topology and know which configuration path and configuration tool you will use.

Related concepts:

"BPEL process archiving overview" on page 75
If you configure the Business Process Archive Manager, you use a script to move completed process instances and human tasks from the Business Process Choreographer database to an archive database.

Related tasks:

"Planning for a remote client application" on page 119
Planning for a remote Business Process Choreographer client application that uses the Business Process Choreographer APIs and runs on a Process Server client installation.

Planning to create a basic sample Business Process Choreographer configuration:

This basic sample configuration, for a stand-alone server, does not include a sample organization.

You have performed "Planning the topology, setup, and configuration path" on page 81, and have decided that you want the "Basic sample", which is not suitable for a production system.

1. Be sure that you know which tool and which options you will use to get the "Basic sample" Business Process Choreographer configuration:

   Using the Installer:
   Performing a typical install of the Process Server or the Process Center will only configure "Basic sample" Business Process Choreographer configuration if you select to use a DB2 database.

   Using the Profile Management Tool:

   Typical profile creation
   The "Basic sample" Business Process Choreographer configuration is only configured if you select to use a DB2 database.

   Advanced profile creation
   To get the "Basic sample" Business Process Choreographer configuration, you must select the Business Process Choreographer option. This configuration can use any supported database.

2. If you want the Human Task Manager to be able to send escalation e-mails, plan the following:
   • If there will not be a local Simple Mail Transfer Protocol (SMTP) mail server available, plan to change the mail session later to point to a suitable mail server.
   • Plan to change the sender address for the e-mails. Otherwise, it will use a dummy sender address.

3. Be aware that this sample configuration uses the WebSphere administrator user ID and password for the various Business Process Choreographer user IDs.

You have planned to create a basic sample Business Process Choreographer configuration.

Planning to create a sample Business Process Choreographer configuration including a sample organization:

This sample includes a 15 person sample organization, which is suitable for experimenting with people assignment and substitution on a stand-alone server.

You have performed "Planning the topology, setup, and configuration path" on page 81, and have decided that you want the "Sample with organization" configuration.

This sample Business Process Choreographer configuration requires minimal planning.

1. Plan to use the Installer, and to perform a custom installation, using the **Stand-alone development IBM Business Process Manager Advanced - Process Server (qbpmaps)** option. The sample configuration uses DB2 Express.

2. If you want the Human Task Manager to be able to send escalation e-mails, plan the following:
   - If there will not be a local Simple Mail Transfer Protocol (SMTP) mail server available, plan to change the mail session later to point to a suitable mail server.
   - Plan to change the sender address for the e-mails. Otherwise, it will use a dummy sender address.

3. Be aware that this sample configuration uses the WebSphere administrator user ID and password for the various Business Process Choreographer user IDs.

You have planned to create a sample Business Process Choreographer configuration including a sample organization.

Planning to use the administrative console's deployment environment wizard:

For a production system plan all the configuration parameters for Business Process Choreographer, including a separate database. For a non-production system you can use a shared database.

You have performed "Planning the topology, setup, and configuration path" on page 81, and have selected the "Production deployment environment" configuration path.

When using the deployment environment wizard, you must select the deployment environment pattern, then you have the opportunity to change the default database parameters and authentication aliases for the WBI_BPC component, and enter other parameters for Business Process Choreographer.

1. If you do not have enough information or authority to create the whole configuration on your own, consult and plan with the people who are responsible for other parts of the system. For example:
   - You might need to request information about your organization's LDAP server, if it uses authentication you will need to request a user ID, and authorization.
   - If you are not authorized to create the database, your database administrator (DBA) must be included in planning the databases. Your DBA will need a copy of the database scripts to customize and run.

2. Perform "Planning security, user IDs, and authorizations" on page 91.

3. Decide which deployment environment pattern you will use:
   - Single Cluster
   - Remote Messaging
   - Remote Messaging, Remote Support, and Web
   - Remote Messaging and Remote Support

4. If you are planning to have dedicated databases for the following:
   - The BPEDB database for Business Process Choreographer, which can be changed in the wizard in a table row for the component WBI_BPC.
   - The BPEME database for the Business Process Choreographer messaging engine, which can be changed in the wizard in a table row for the component WBI_BPC_ME.
   - The OBSRVRDB database for the Business Process Choreographer Explorer reporting function, which can be changed in the wizard in a table row for the component WBI_BPCEventCollector.

   Plan the following parameters for each database, to enter on the wizard's database page:

Database name
> The name of the database, for example, BPEDB, BPEME, or OBSRVRDB instead of the default value, CMNDB, which results in sharing the common database. The default value is only suitable for lower performance setups.

Schema
> The schema qualifier to be used for each database.

Create Tables
> If selected, the tables will be created automatically the first time that the database is accessed. For this option to work, the database must already exist, and the user name provided for creating the data source must have the authority to create tables and indexes in the database. If not selected, the tables will not be created automatically, and you must create the tables manually by running scripts. For a production system, clear this option, and plan to use the provided SQL scripts to setup the database.

User Name and Password
> A user ID that has the authority to connect to the database and to modify the data. If the user ID has the authority to create tables and indexes in the database, then the option to create the tables automatically can be used, and when necessary, the database schema will be updated automatically after applying a service or fix pack.

Server The address of the database server. Specify either the host name or the IP address.

Provider
> The JDBC provider.

Also plan the database-specific settings, which you can set using the **Edit** button for the JDBC provider.

Table 39. Database-specific settings

Database / JDBC driver type	Database-specific settings
DB2 UDB – Universal driver	• User name • Password • Database name • Schema name • Server name • Server port number • Driver type • Description • Create tables
DB2 for z/OS	• Implementation type – Connection pool data source or XA data source • User name • Password • Database name • Schema name • Server name • Server port number • Storage group • Description

Table 39. Database-specific settings (continued)

Database / JDBC driver type	Database-specific settings
Microsoft SQL Server – Datadirect, and Microsoft drivers	• User name • Password • Database name • Server name • Server port number • Description • Create tables
Oracle – thin driver	• User name • Password • Database name • Schema name • Server name • Server port number • Driver type – thin • Description • Create tables

For more details about planning the databases, see "Planning the databases for Business Process Choreographer" on page 96.

5. Plan the user name for the Business Process Choreographer JMS authentication alias that you will enter during the Security step.

6. Plan the **Business Process Choreographer Explorer context root**, which defines part of the URL that browsers must use to reach the Business Process Choreographer Explorer.

7. Plan the security parameters for the Business Process Choreographer step. These user IDs and groups will be used for the Business Flow Manager and Human Task Manager:

   Administrator User and Group
   Plan a list of user IDs or a list or groups, or both, onto which the business administrator role is mapped.

   Monitor User and Group
   Plan a list of user IDs or a list or groups, or both, onto which the business monitor role is mapped.

   JMS API Authentication User and Password
   The run-as user ID for the Business Flow Manager message driven bean.

   Escalation User Authentication User and Password
   The run-as user ID for the Human Task Manager message driven bean.

   Cleanup User Authentication User and Password
   The run-as user ID for the Business Flow Manager and Human Task Manager cleanup service. This user must be in the business administrator role.

8. If you want to configure an e-mail session for the Human Task Manager escalations, plan the following parameters for the Business Process Choreographer step:

   Mail transport host
   The host name or IP address where the Simple Mail Transfer Protocol (SMTP) e-mail service is located.

   Mail transport user and Mail transport password
   If the mail server does not require authentication, you can leave these fields empty.

Business Process Choreographer Explorer URL

> This URL is used to provide a link in generated e-mails so that a business administrator who receives an e-mail notification can click on the link to view the related business process or human task in their Web browser.

9. If you are going to use the Business Process Choreographer Explorer, the Business Space, or a client that uses the Representational State Transfer (REST) API or the JAX Web Services API, decide on the context roots for the REST API and the JAX Web Services API.

   - The defaults for the Business Flow Manager are `/rest/bpm/bfm` and `/BFMJAXWSAPI`.

   - The defaults for the Human Task Manager are `/rest/bpm/htm` and `/HTMJAXWSAPI`.

   - When configured on a server, or on a single cluster, or on multiple clusters that are mapped to different Web servers, you can use the default values.

   - When configured in a network deployment environment on multiple deployment targets that are mapped to the same Web server, do not use the default values. The context root for each Business Process Choreographer configuration must be unique for each combination of host name and port. You will have to set these values manually using the administrative console after configuring Business Process Choreographer.

10. If you want to use people assignment, perform "Planning for the people directory provider" on page 108.

You have planned to use the administrative console's deployment environment wizard.

Planning for a custom Business Process Choreographer configuration:

Plan the configuration parameters and options for creating a custom configuration, using either the Administrative console's Business Process Choreographer configuration page or the bpeconfig.jacl configuration script.

You have performed "Planning the topology, setup, and configuration path" on page 81, and have selected the "Flexible custom configuration" configuration path.

1. Know which of the following you will use to configure Business Process Choreographer:

   - Administrative console's Business Process Choreographer configuration page

   - The bpeconfig.jacl configuration script

2. If you do not have enough information or authority to create the whole configuration on your own, consult and plan with the people who are responsible for other parts of the system. For example:

   - You might need to request information about your organization's LDAP server, if it uses authentication you will need to request a user ID, and authorization.

   - If you are not authorized to create the database, your database administrator (DBA) must be included in planning the databases. Your DBA will need a copy of the database scripts to customize and run.

3. "Planning security, user IDs, and authorizations" on page 91

4. "Planning the databases for Business Process Choreographer" on page 96

5. "Planning for the Business Flow Manager and Human Task Manager" on page 107

6. "Planning for the people directory provider" on page 108

7. "Planning for the Business Process Choreographer Explorer and Business Process Archive Explorer" on page 110

8. If you will use the Administrative console's Business Process Choreographer configuration page, make sure that you have planned all the values that you will enter on the configuration page.

9. If you will use the bpeconfig.jacl configuration script:

   a. Make sure that you have planned all the options and parameter values that you must specify on the command-line, or in a batch file. The options and parameters are summarized in "Using the

bpeconfig.jacl script to configure Business Process Choreographer" on page 434, and are described in detail in "bpeconfig.jacl script file" on page 442.

   b. If you want, you can specify the parameter values in a response file.

   c. If you will use a batch file to run the bpeconfig.jacl configuration script, create the batch file or shell script.

You have planned everything you need to be able to create a custom Business Process Choreographer configuration.

Perform "Configuring Business Process Choreographer" on page 424.

Planning security, user IDs, and authorizations:

Plan the user IDs and authorizations for configuring Business Process Choreographer.

During configuration, you need to use various user IDs and you must specify other user IDs that will be used at runtime. Make sure that you plan and create all user IDs before you start configuring Business Process Choreographer.

For a sample Business Process Choreographer configuration:
> You only need the authority to create a new profile. In the Profile Management Tool, using the option to create a typical profile, when you enable administrative security, the Business Process Choreographer sample will also be configured. No other planning or user IDs are required, and you can skip this task.

For a high security configuration:
> You must plan all user IDs in detail as described in this task.

For a low security configuration:
> If you do not require full security, for example for a non-production system, you can reduce the number of user IDs that are used. You must plan all user IDs in detail, but you can use certain user IDs for multiple purposes. For example, the database user ID used to create the database schema can also be used as the data source user name to connect to the database at runtime.

If you will use the bpeconfig.jacl script to configure Business Process Choreographer:

> The user ID used to run the bpeconfig.jacl script must have the necessary rights for the configuration actions that the script will perform. Otherwise, you must specify user IDs as parameters for the script that have the necessary rights, in which case you must plan all user IDs in detail. For user IDs that can be specified as parameters to the bpeconfig.jacl script, the parameter names are included in the table.The profile must already exist. If WebSphere administrative security is enabled, you need a WebSphere administrator user ID in the `configurator` role that you can use to invoke the wsadmin tool.

If you will use human tasks:
> - WebSphere administrative security and application security must both be enabled.
> - Do not enable the security option **Use realm-qualified user names**.

1. Print a hardcopy of this page so that you can write your planned values in the last column. Keep it for reference when you are configuring Business Process Choreographer, and keep it in your records for future reference.
2. Plan the user ID you will use on the Process Server to configure Business Process Choreographer.

Table 40. Planning user IDs for Process Server

User ID or role	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
The user who configures Business Process Choreographer	Configuring	Logging onto the administrative console and running administrative scripts.	WebSphere administrator or configurator role, if WebSphere administrative security is enabled.	
		If you are going to run the bpeconfig.jacl script to configure the Business Process Choreographer.	When running the script, you must also provide any user IDs that are necessary for the options that you select. For more information see "bpeconfig.jacl script file" on page 442.	

3. Plan which people need access to subdirectories of *install_root*. If your security policy does not allow these people to be granted this access, they will need to be given copies of the files in the directories.

Table 41. Planning access to the subdirectories of install_root

User ID or role	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
Database administrator	Configuring	Running the scripts to setup the following databases: **BPEDB**: This is the default name for the database for Business Process Choreographer. **OBSRVDB**: This is the default name for the database for the Business Process Choreographer Explorer reporting function.	If you use the **bpeconfig.jacl** script to configure Business Process Choreographer: Read access to (or a copy of) the **createSchema.sql** script that **bpeconfig.jacl** generates in a subdirectory of the directory: • `Linux` `UNIX` *profile_root*/dbscripts/ ProcessChoreographer/ • `Windows` *profile_root*\dbscripts\ **ProcessChoreographer**	
			If you want to review the database script files: Read access to (or a copy of the files in) the database scripts provided in the directory: • `Linux` `UNIX` *install_root*/dbscripts/ ProcessChoreographer/*database_type* • `Windows` *install_root*\dbscripts\ ProcessChoreographer*database_type* Where *database_type* is one of the following: • DB2 • DB2zOS • Oracle • SQLServer	
Integration developer	Customizing	To use people assignment with a Lightweight Directory Access Protocol (LDAP) or Virtual Member Manager (VMM) people directory provider, you will have to customize a copy of the sample XSL transformation file.	Either read access to the Staff directory, or a copy of the files in the directory: • `Linux` `UNIX` *install_root*/ ProcessChoreographer/Staff • `Windows` *install_root*\ ProcessChoreographer\Staff The integration developer will also need write access to a suitable directory to make the customized XSL transformation file available to the server.	

4. Plan the user IDs that will be used to create, configure, and access the database that is used by Business Process Choreographer.

Table 42. Planning user IDs for the BPEDB database

User ID or role	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
Database administrator	Before configuring	To create the BPEDB database.	Create the database.	
Database administrator or an administrator who will run the bpeconfig.jacl script	Configuring	You or your database administrator must run Business Process Choreographer database scripts, unless you are using the default database.	For the BPEDB database: Alter tables, connect, insert tables, and create indexes, schemas, tables, table spaces, and views.	
Data source user name\n\nIf you use the bpeconfig.jacl script, this is the -dbUser parameter.	Configuring	If you select the **Create Tables** option, this user ID is used to create the database tables.	To use the **Create Tables** configuration option, this user ID must also be authorized to perform the following actions on the BPEDB database: Alter tables, connect, insert tables, and create indexes, tables, and views.	
	Runtime	The Business Flow Manager and Human Task Manager use this user ID to connect to the BPEDB database.	This user ID must be authorized to perform the following actions on the BPEDB database: Connect, delete tables, insert tables, select tables and views, and update tables.	
	After applying service or a fix pack	When necessary, the database schema is updated automatically after applying service. This only works if this user ID has the necessary database rights, otherwise schema updates must be performed manually.	This user ID must be authorized to perform the following actions on the BPEDB database: Alter, create, insert and select tables, connect to the database, create and drop indexes and views.	

5. If you will configure the Business Process Choreographer Explorer reporting function, plan the user IDs to use to create, configure, and access the reporting database.

Table 43. Planning user IDs for the reporting database

User ID or role	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
Database administrator	Before configuring	To create the reporting database. For Oracle, to create the reporting database.	Create the database.	
Database administrator or an administrator	Configuring	Running the setupEventCollector tool, or SQL scripts to create the schema.	For the reporting database: Alter tables, connect, create procedure, insert tables, and create tables, table spaces, and views.\n\nIf you are going to use the Java implementation of the user-defined functions, the user ID must also be authorized to install the JAR file.	

Table 43. Planning user IDs for the reporting database (continued)

User ID or role	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
Event collector data source user name	Runtime	Connecting to the reporting database. If you are using the reporting database and it uses the BPEDB database, use the same user name as for the Business Process Choreographer data source.	Connect to the database.	

6. If you will have a separate database for the Business Process Choreographer's messaging engine message store, plan the user ID that will be used to access the database.

Table 44. Planning user ID for the preconfigured BPEME messaging engine database

User ID	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
Bus data source user name If you use the bpeconfig.jacl script, this is the -medbUser parameter.	Configuring and runtime	This user name is used to connect to the BPEME database, and to create the necessary tables and index.	This user ID must be authorized to perform the following actions on the BPEME database: Connect, delete tables, insert tables, select tables and views, and update tables.	

7. Plan the Business Process Choreographer user IDs for the Java Message Service (JMS).

Table 45. Planning user IDs for JMS

User ID	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
JMS authentication user	Runtime	The authentication alias for the system integration bus. You must specify it when configuring Business Process Choreographer. If you use the bpeconfig.jacl script, this user IDs and its password are the parameters -mqUser and -mqPwd.	It must be a user name that exists in the WebSphere user registry. It is automatically added to the Bus Connector role for the Business Process Choreographer bus.	
JMS API authentication user	Runtime	Any Business Flow Manager JMS API requests will be processed on using this user ID. If you use the bpeconfig.jacl script, this user IDs and its password are the parameters -jmsBFMRunAsUser and -jmsBFMRunAsPwd.	The user name must exist in the WebSphere user registry.	

Table 45. Planning user IDs for JMS (continued)

User ID	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
Escalation authentication user	Runtime	Any Human Task Manager escalations will be processed using this user ID. If you use the bpeconfig.jacl script, this user ID and its password are the parameters -jmsHTMRunAsUser and -jmsHTMRunAsPwd.	The user name must exist in the WebSphere user registry.	

8. Plan which groups or user IDs, the Java EE roles for the Business Flow Manager and Human Task Manager will be mapped onto.

Table 46. Planning the security roles for the Business Flow Manager and Human Task Manager

User ID or role	When the user ID is used	What the user ID is used for	Planned list of user IDs, groups, or both
Administrator user	Runtime	The system administrator and monitor security roles for both the Business Flow Manager and Human Task Manager are each mapped to a list of user IDs, groups, or both. The values defined here create the mapping that gives users in this role the access rights that they need. If you use the bpeconfig.jacl script, these users and groups correspond to the following parameters: • -adminUsers • -adminGroups • -monitorUsers • -monitorGroups	
Administrator group	Runtime		
Monitor user	Runtime		
Monitor group	Runtime		

9. Plan the user ID to use as the Java EE run-as role for administration jobs like the Business Flow Manager and Human Task Manager cleanup services and the process instance migration tool. This user ID must be a member of the administrator role user or group planned in Table 46.

Table 47. Planning the user ID for running administration jobs

User ID	When the user ID is used	What the user ID is used for	Planned user ID
Administration job user ID	Runtime administration	This user ID is used to run administration jobs. If you use the bpeconfig.jacl script, this user ID and its password correspond to the -adminJobUser and -adminJobPwd parameters.	

10. If you want human task escalations to send notification e-mails for specific business events, and your Simple Mail Transfer Protocol (SMTP) server requires authentication, decide which user ID will be used to connect to the e-mail server.

Table 48. Planning the user ID for the e-mail server

User ID or role	When the user ID is used	What the user ID is used for	Which rights the user ID must have	Planned user ID
Mail transport user	Runtime	The Human Task Manager uses this user ID to authenticate against the configured mail server to send escalation e-mails. If you use the bpeconfig.jacl script, this is the -mailUser parameter. The password is the -mailPwd parameter.	Send e-mails.	

11. If you will use people assignment for human tasks, and you will use a Lightweight Directory Access Protocol (LDAP) people directory provider that uses simple authentication, plan a Java Authentication and Authorization Service (JAAS) alias and an associated user ID that will be used to connect to the LDAP server. If the LDAP server uses anonymous authentication this alias and user ID are not required.

Table 49. Planning the alias and user ID for the LDAP server

User ID or role	When the user ID is used	What the alias and user ID are used for	Which rights the user ID must have	Planned alias and user ID
LDAP plug-in property: Authentication Alias	Runtime	The alias is used to retrieve the user ID that is used to connect to the LDAP server. You specify this alias ID when customizing the properties for the LDAP plug-in, for example **mycomputer/My LDAP Alias**.	The JAAS alias must be associated with the LDAP user ID.	
LDAP user ID	Runtime	This user ID is used to connect to the LDAP server.	If the LDAP server uses simple authentication, this user ID must be able to connect to the LDAP server. This user ID is either a short name or a distinguished name (DN). If the LDAP server requires a DN you cannot use the short name.	

12. Create the user IDs that you have planned with the necessary authorizations. If you do not have the authority to create them all yourself, submit a request to the appropriate administrators, and enter the names of the user IDs that they create for you in this table.

You know which user IDs will be required when configuring Business Process Choreographer.

Planning the databases for Business Process Choreographer:

Plan the databases for Business Process Choreographer.

Depending on your Business Process Choreographer setup, you might need to plan to create up to three databases, or none (if all the databases are put in the CMNDB common database). Each Business Process Archive Manager also needs a database, which can also reside in the common database. However, for production systems, you should plan to have all the Business Process Choreographer databases as separate, high-performance databases.

Business Process Choreographer can share a database with other process server components. The BPEDB database is used by the Business Flow Manager and the Human Task Manager. For a production system plan to have a dedicated database for each deployment target where Business Process Choreographer is configured.

If you have multiple Business Process Choreographer configurations, then each of these needs its own database or database schema. The Business Process Choreographer database tables cannot be shared between multiple Business Process Choreographer configurations.

If you use the Business Process Choreographer Explorer reporting function, which until Version 6.1.2 was known as the Business Process Choreographer Observer, it can use the same BPEDB database, but using an additional database, gives better performance. Some of the scripts for setting up the reporting database already contain the suggested name OBSRVDB, though you are free to choose a different name.

The Business Process Choreographer messaging engines can either share the database used by the SCA messaging engines, or have their own BPEME database. For more information about which databases are supported for your selected configuration path, see Table 38 on page 83 or .

1. For a production system:
   a. If performance is important, plan to use a separate database for Business Process Choreographer, as described in "Planning the BPEDB database" on page 98, otherwise, plan to use the CMNDB common database.
   b. If you will use the Business Process Choreographer Explorer reporting function:
      • If you want to minimize the impact that its queries have on the performance of your BPEL processes, plan to use a separate database as described in "Planning the reporting database" on page 103.
      • Otherwise, plan to configure it to use the BPEDB database.
   c. For high-load setups, for example, a large cluster with very high messaging rates, consider improving the performance by using a separate database for the Business Process Choreographer messaging engine. This allows the database logging to be parallelized, which can help to prevent it from becoming a bottleneck.
      • If you use the administrative console to configure Business Process Choreographer, and you want a separate database for the Business Process Choreographer messaging engine, perform "Planning the messaging engine database" on page 106, otherwise plan to use the default database that is used by the Service Component Architecture (SCA).
      • If you use the bpeconfig.jacl configuration script to configure Business Process Choreographer, Business Process Choreographer will use the same database as a message store that is used by SCA. Business Process Choreographer will use its own schema in the same database.
   d. Optional: Use the database design tool to interactively create the database design file and the SQL script files that the database administrator can use to create all three databases that you planned in the previous steps. There are significant advantages to using this tool:
      • You can run the tool as often as necessary to refine the database design parameters, without the risk of breaking them, rather than editing the provided template SQL files manually.
      • If you have used a database design file, the next time that you migrate to a newer version of this product, you can generate the schema update SQL scripts.
      • If you create a database design file for a test configuration, it is convenient to be able to make of copy of the design file and make minor changes to it for the databases for your production system.
      • Using the tool, you can also define the data sources for all three databases. Though you must configure the data source for the reporting database manually.

      Important: When using the database design tool to create a deployment environment, after you have configured the common database, Business Process Choreographer is shown as being "complete". This is because there is a valid default, that causes the tables for Business Process

Choreographer to be created in the common database. However, this default is not suitable for production systems. For a production system, make sure that you configure a dedicated database for each deployment target where Business Process Choreographer is configured.

2. For a non-production system where simplicity of setup is more important than performance, your options depend on the configuration path that you have chosen:
   - If you will use the Installer or Profile Management Tool to create the "Basic sample" or the "Sample with organization" Business Process Choreographer configuration, a separate default BPEDB database is created, which is also used by the Business Process Choreographer Explorer reporting function. For the Business Process Choreographer messaging engine, the default is to have a separate default database (BPEME). If you use the Profile Management Tool, you can also select to share the CMNDB database.
   - If you will use the Profile Management Tool to create a deployment environment that includes a Business Process Choreographer configuration, Business Process Choreographer, Business Process Choreographer Explorer reporting function, and the Business Process Choreographer messaging engine will all use the CMNDB database. Therefore, you do not need to do any database planning for Business Process Choreographer.

3. If you will configure one or more Business Process Archive Manager configurations, perform "Planning the Business Process Archive database" on page 107 for each Business Process Archive Manager configuration.

You have planned all the databases for your Business Process Choreographer configuration.

Planning the BPEDB database:

Plan the database for Business Process Choreographer.

Business Process Choreographer requires a database. SQL scripts are provided for all supported database systems to create and administer the database schema. When a database is in place, JDBC access to the database has to be configured for Business Process Choreographer. Depending on the database system, your topology, the purpose of the installation, and the administrative tool you choose to use, some or all of the tasks to create the database and to configure JDBC access can be automated. For a productions system, Business Process Choreographer should have its own database, but if performance is not important, you can also configure Business Process Choreographer to share a database with other IBM Business Process Manager components.

1. Make sure that your choice of BPEDB database and configuration path are compatible: The following databases are supported:
   - DB2 UDB for Linux, UNIX, and Windows
   - DB2 for z/OS
   - DB2 Express
   - Microsoft SQL Server
   - Oracle

   If you have already decided how you are going to configure Business Process Choreographer, your choice of configuration path has implications on how you can create the database. If you have not yet decided which configuration path to use to configure Business Process Choreographer, identifying your database requirements will help eliminate the configuration paths that do not support your needs. For details about which databases are supported by each configuration path, see Table 38 on page 83 or .

2. If you do not need the performance, scalability, and security that is normally required for a production system, you can have the database objects created in a single table space on a database server that is local to IBM Business Process Manager. This minimizes the planning and effort necessary to create the database, but requires that the user ID used to access the database also has database administration rights. The options that you need to plan depend on the configuration path that you choose:

a. If you use the **Installer** or **Profile Management Tool** to get a sample Business Process Choreographer configuration, a separate default BPEDB database is created for Business Process Choreographer, which requires no further planning.

b. If you use the administrative console **Deployment Environment wizard** to configure Business Process Choreographer, and it is sufficient for the default schema to be created in a single table space, plan to use a copy of the provided SQL script to create the BPEDB database.

c. If you use the **bpeconfig.jacl** tool to configure Business Process Choreographer, plan which of the following apply in your case.

- If you will run the bpeconfig.jacl script in interactive mode, you can select to create the tables in an existing database.
- If you have a user ID with the authority to create the database objects, you can use the -createDB yes option, which causes the bpeconfig.jacl script to generate and run an SQL file to create the database objects in the default table space. In this case also plan to stop the server and use the `-conntype NONE` option for the **wsadmin** utility.
  - If you are using an Oracle database, the database must already exist. If you are using a DB2 for z/OS database, the database instance must already exist. For other database types, bepconfig.jacl will try to create the database.
  - If any error occurs while creating the database or objects, you can use the generated SQL scripts as if you used the -createDB no option.
- If you do not have a user ID with the authority to create the database objects, you must use the -createDB no option, which causes the bpeconfig.jacl script to generate an SQL file to create the database objects in the default table space, but it does not run the script. In this case, plan to ask your database administrator to customize and run the script for you.

For more information about the tool and other database parameters, see "bpeconfig.jacl script file" on page 442.

d. If you use the administrative console's **Business Process Choreographer configuration page**:

- To have the Business Process Choreographer database objects created in the common database CMNDB, plan to use the default database as the target for the Business Process Choreographer data source.
- To reuse an existing database, plan to specify the existing database as the target for the Business Process Choreographer data source.
- If you select the `Create tables` option, Business Process Choreographer will create the database objects that it needs in the default table space, the first time that it uses the database. This option cannot be used for a DB2 on z/OS database nor for a remote Oracle database. To use this option for a DB2 UDB database, the database must have **AUTOMATIC STORAGE YES** enabled.
- To create the database using scripts, plan not to use the `Create tables` option.

e. Skip to step 12 on page 102.

3. Perform all of the following steps if you want a **high performance** database setup for Business Process Choreographer with the following characteristics:

- The database is only used by Business Process Choreographer.
- Ideally, the database is on a dedicated server that has plenty of memory to allow complex queries and read operations to be processed efficiently. The database can be local to the Process Server system. The database host requires a fast storage subsystem, for example, hardware-assisted disk arrays such as network-attached storage or a storage area network usually offer better performance than single disks.
- You can customize the allocation of tables space to disks for better performance.
- You can use a different user ID to access the database to the one used to administer it.

4. If you have not already planned the user IDs for the database, perform Table 42 on page 93.

5. Plan the allocation of disks and table spaces. For a production system, take into account the results of your experiences during development and system testing. The size of your database depends on many factors.

- Processes that run as microflows use very little database space.
- Each process template can require tens or hundreds of kilobytes.
- If the nature of your processes results in a frequent transaction log updates, it might be necessary to allocate the transaction logs to dedicated disks.

If you will use individual disks, and your database system supports allocating database tables to different disks, plan how many disks you will use and how you will allocate them.

For DB2 for z/OS, a table space is created for each table, and additional larger object (LOB) table spaces for LOB columns.

Plan the table spaces if you use one of the following:

- DB2
- Oracle

Your goal, when planning the table spaces, is to distribute input and output operations over as many disk drives as possible. By default, the scripts create the following table spaces:

AUDITLOG
> Contains the audit trail tables for processes and tasks. Depending on the degree of auditing that is used, access to tables in this table space can be significant. If auditing is turned off, tables in this table space are not accessed.

BPETEMP8K
> Contains the temporary table space to support the 8 KB buffer pools that are needed when migrating the database schema.

BPETS8K
> Contains the table space to support the 8 KB buffer pools that are needed when migrating the database schema.

INSTANCE
> Holds process instance and task tables. It is always used intensively, regardless of the kind of long-running process that is run. Where possible, locate this table space on its own disk to separate the traffic from the rest of the process database. The growth rate of this table space depends on your business applications.

LOBTS
> Stores large data objects belonging to instances of BPEL processes and human tasks. It is used intensively and its growth rate correlates with the number of instances.

SCHEDTS
> Contains the tables that are used by the scheduling component. Access to tables in the scheduler table space is usually low, because of the caching mechanisms used in the scheduler. The size of this table space correlates to the number of instances.

STAFFQRY
> Contains the tables that are used to temporarily store staff query results that are obtained from staff registries like Lightweight Directory Access Protocol (LDAP). When BPEL processes contain many human activities, tables in this table space are frequently accessed.

TEMPLATE
> Contains the tables that store the template information for processes and tasks. The tables are populated during the deployment of an application. At run time the access rate is low. The data is not updated, and only new data is inserted during deployment.

WORKITEM
> Holds the tables that are required for work item processing. Work items are used for human task interaction. Depending on the number of human tasks in the BPEL processes, access to

the tables in this table space can vary from a low access rate to significantly high access rate. The access rate is not zero, even when no explicit human tasks are used, because work items are also generated to support administration of long-running processes.

They can be all on one high-performance RAID-array, but each table space should be in a different file to allow parallel access. Keep in mind that for a given number of disks, using a RAID configuration will have better performance than allocating table spaces to separate disks. For example, for a DB2 database that is running on a dedicated server with N processors, consider using the following guidelines:

- For the table spaces, use a RAID-1 array with 2*N primary disks, 2*N mirror disks, and a stripe size of 256 kb.
- For the database transaction log, use a RAID-1 array with 1.5*N primary disks, 1.5*N mirror disks, and a stripe size of 64 kb.

If you are using a DB2 database, running on a four-processor server, and will use 15 disk drives on a RAID controller, consider using the following allocations:

- One disk for the operating system and paging (known as the page file on Windows, paging space on AIX®, and swap space on Solaris).
- Use eight disks in a RAID-1 configuration (four primary disks and four mirrors) as one logical disk for the database control files and table spaces, using a stripe size of 256 kB.
- Use six disks in a RAID-1 configuration (three primary disks and three mirrors) as one logical disk for the database transaction log, using a stripe size of 64 kB.

If you are using an Oracle database, consider the following guidelines:

- Stripe and mirror everything (SAME) for all files, across all disks, using a one megabyte stripe width.
- Mirror data for high availability.
- Subset data by partition, not by disk.
- Use the Automatic Storage Management (ASM) file system.
- Create a partition (for the tables space) that is on the outside half of the disk drives.
- Make sure that you customize the distribution of the table spaces over the available disks when you create the BPEDB database schema.
- The redo log files are on dedicated disks.
- Enable automatic memory management.
- Set the statistics level to **TYPICAL**.
- Customize the maintenance window for automatic maintenance jobs.

If you are using a DB2 for Linux, UNIX, and Windows database, consider the following guidelines:

- Make sure that you customize the distribution of the table spaces over the available disks when you create the BPEDB database schema.
- The transaction log files are on dedicated disks.
- You might need to tune the lock timeout and deadlock check time configuration parameters to suit your setup.

6. Plan that you or your database administrator will customize the SQL scripts that create the database objects before running them.

- If you use the **bpeconfig.jacl** tool to configure Business Process Choreographer, use the -createDB no option. This prevents the tool from running the SQL script that it generates. The generated SQL files are based on the original SQL files that are provided for your database, but with all configuration parameters that are provided to the bpeconfig.jacl tool pre-filled in the SQL file, which minimizes the customization necessary.
- If you use the administrative console's **Business Process Choreographer configuration page** or **Deployment Environment wizard** to configure Business Process Choreographer, plan to clear the Create tables option, to make sure that you do not get the default schema. The generated SQL

files are based on the original SQL files that are provided for your database, but all configuration parameters that you enter in the administrative console are pre-filled in the generated SQL file, which minimizes the customization necessary.

For more information about using the generated SQL scripts, refer to "Using a generated SQL script to create the database schema for Business Process Choreographer" on page 470. If you want to preview the original SQL files for your database, so that you can plan what customizations you will make, locate and view the SQL `createSchema.sql` script for your database, but do not modify it. The original SQL files are located in the following directory:

- **Linux** **UNIX** `install_root/dbscripts/ProcessChoreographer/database_type`
- **Windows** `install_root\dbscripts\ProcessChoreographer\database_type`

Where *database_type* is one of the following:
- DB2
- DB2zOS
- Oracle
- SQLServer

7. If the database server is remote to the Process Server system, plan to install either a Java Database Connectivity (JDBC) driver or a database client on the Process Server system:
   - For a Type 2 JDBC driver: Decide which database client to install, and where to install it.
   - For a Type 4 JDBC driver: Locate the JAR file for the driver, which is provided as part of your product installation, and decide where to install it.

8. If the database server is local to the Process Server system, the JDBC JAR files required to access the database are installed with the database system. Find and note the location of these JAR files.

9. If you use DB2 for z/OS plan the changes you will make to the script files `createTablespace.sql` and `createSchema.sql`.

   a. Plan the values that you will substitute for storage group name, database name (not the subsystem name), and schema qualifier.

   b. Evaluate the default assignments of tables to table spaces. Then plan any necessary changes to suit your setup.

   c. Evaluate the default assignment of table spaces to buffer pools, and the default buffer pool sizes. Then plan any necessary changes to suit your setup.

10. Decide which server will host the database. If the database server is remote, you need a suitable database client or a type-4 JDBC driver that has XA-support.

11. Decide the values for the following configuration parameters that you will need to specify for the database:
    - The Java Database Connectivity (JDBC) provider can be type-2 or type-4. For Oracle, only the type 4 thin driver is supported.
    - Database instance (for Oracle, the database name, for DB2 on z/OS: the subsystem name).
    - Schema qualifier. The default is to use the connection user ID as the implicit schema qualifier.
    - User name to create the schema.
    - If you are using a type-4 JDBC driver: the name or IP address of the database server.
    - The port number used by the database server. This is only required if you are using a type-4 JDBC driver.
    - The user ID and password for the authentication alias. This is the user ID that the jdbc/BPEDB data source uses to access the database at runtime. These are the -dbUser and -dbPwd parameters for bpeconfig.jacl.

12. Plan to support enough parallel JDBC connections:
    a. Estimate the maximum number of parallel JDBC connection required to the Business Process Choreographer BPEDB database. This will depend on the nature of your BPEL processes and the number of users. A good estimate is the maximum number of clients that can concurrently connect through the Business Process Choreographer API plus the number of concurrent

endpoints defined in the BPEInternalActivationSpec and HTMInternalActivationSpec JMS activation specifications, plus a 10% safety margin to allow for overload situations.

   b. Make sure that your database system can support the necessary number of parallel JDBC connections.

   c. Plan suitable settings according to the best practices for your database system to support the expected number of parallel JDBC connections. ga

13. For a production system, make plans for the following administration tasks:

- Tune your database after it is populated with typical production data.
- Retune your database after your application workload evolves.
- Regularly delete completed process instances and task instances from the database. For an overview of the tools and scripts that are available, see Cleanup procedures for Business Process Choreographer.

You have planned the database for Business Process Choreographer.

Planning the reporting database:

Plan the database for the Business Process Choreographer Explorer reporting function.

The Business Process Choreographer Explorer reporting function can use the same database, but using an additional database gives better performance. If you will not reuse the BPEDB database, perform the following:

1. If you plan to have multiple event collector instances, and they are going to use the same database, plan unique schema names for each event collector. For better performance, plan a database for each event collector.
2. Decide which database system to use for the database:
   - DB2 UDB for Linux, UNIX, and Windows
   - DB2 for z/OS
   - Oracle
3. Decide which server will host the database.
4. If you have not already planned the user IDs for the database, perform Table 43 on page 93.
5. Decide whether you will use SQL-based or Java-based user-defined functions (UDFs).
   - The Java UDFs are more precise, but to be able to use them, you must install a JAR file in the database.
   - If you use a DB2 for z/OS database, and would prefer that the database is created using Java-based UDFs, rather than SQL-based UDFs, then you have no choice but to use the menu-driven administration tool, `setupEventCollector`.

   For more information about UDFs, see "User-defined functions for Business Process Choreographer Explorer reporting function" on page 505.

6. If you will not use the `bpeconfig.jacl` script to configure the Business Process Choreographer Explorer reporting function and event collector to use the BPEDB database, decide how you will create the reporting database.

   Using the menu-driven administration tool, setupEventCollector
   You can use this tool to create the database in an interactive mode, with your input validated against the runtime environment. If you use this tool, decide whether you want the tool to create an SQL file, but not run it – use this option if you want to customize the SQL before running it or to give to your database administrator to customize and run. For more information about this tool, see "setupEventCollector tool" on page 522.

   Unlike the other ways to create the database, this tool allows you to create either Java-based user-defined functions (UDFs) or SQL-based UDFs. You can also use it to switch between

these two options, and also to install and remove the JAR file that is required to support the UDFs. The tool supports creating the database using either Java-based user defined functions (UDFs) or SQL-based UDFs.

Running SQL scripts

You might need to use the SQL scripts if you are not allowed to use a tool to access the database. If you configured Business Process Choreographer using the bpeconfig.jacl script in batch mode or using the administrative console, an SQL script is generated that has all necessary parameters substituted. Otherwise, you can use the database design tool to generate the SQL scripts interactively.

All SQL scripts create the UDFs for the reporting database using the SQL implementation.

Automatically create tables on first use

Selecting the **Create tables** option on the administrative console's Business Process Choreographer event collector configuration page is an easy way to get a default database schema. This option is not suitable for high performance systems.

SQL-based UDFs are used.

7. If you use a DB2 for Linux, UNIX, or Windows database, plan the following:
   - The database name. If performance in not a priority, you can use the value BPEDB, so that the reporting database uses the Business Process Choreographer database. For better performance, plan to use a separate database, for example, named OBSRVRDB.
   - The user ID to use to connect to the database. You must also know the password for this user ID.
   - The database schema name to use to create the database objects. The default value is the connection user ID.
   - Plan the fully qualified location for the table space OBSVRTS.
   - Decide whether you want to use the SQL-based user-defined function (UDFs) rather than the default, Java-based ones.
   - If you will use the setupEventCollector tool to setup the database, also plan the following:
     - Decide which type of JDBC driver to use:
       - Type 2, connecting using a native database client. This is the default.
       - Type 4, connecting directly via JDBC. In this case, also make sure that you know the following:
         - The host name or IP address of the database server. The default is `localhost`.
         - The port number used for the database. The default is `50000`.
     - Locate the directory where the DB2 JDBC driver files, `db2jcc.jar` and `db2jcc_license_cu.jar` are installed.

8. If you use a DB2 for z/OS database, plan the following:
   - Location name (network name) of the subsystem.
   - The storage group name.
   - The database name as known by the subsystem. The default value is OBSRVRDB
   - The user ID to use to connect to the database. You must also know the password for this user ID.
   - The database schema name (SQLID), under which, the database objects are created.
   - Plan in which storage group the table spaces will be created:
     - Regular table space for OBSVR01, OBSVR02, OBSVR03, OBSVR04, OBSVR05, OBSVR06, OBSVR07, and OBSVR08.
     - LOB table space for OS26201, OS26202, OS26203, and OS26204.
   - If you want to use the Java-based user-defined function (UDFs) rather than the default SQL ones, decide on the name of the WLM environment that you will use to run the functions in.
   - If you will use the setupEventCollector tool to setup the database, also plan the following:
     - Decide which type of JDBC driver to use:

- Type 4, connecting directly via JDBC. In this case, also make sure that you know the following:
  - The host name or IP address of the database server. The default is `localhost`.
  - The port number used for the database. The default is 446.
  - The directory for the JDBC driver JAR files, `db2jcc.jar` and `db2jcc_license_cisuz.jar`.
- Type 2, connecting using a native database client. In this case, also plan what the database alias will be in the local catalog.

9. If you use an Oracle database, plan the following:
   - The SID name. The default value is BPEDB.
   - Decide which Oracle user ID to use to connect to the database. It must have the roles CONNECT and RESOURCE. The default user ID is **system** . You must also know the password for this user ID.
   - The database schema name, under which, the database objects are created. The default value is the user ID used to connect to the database.
   - Plan the fully qualified locations for each of the following table spaces:
     – OBSVRIDX
     – OBSVRLOB
     – OBSVRTS
   - Decide whether you want to use the SQL-based user-defined function (UDFs) rather than the default, Java-based ones.
   - If you will use the setupEventCollector tool to setup the database, also plan the following:
     – The location of the JDBC driver file, `ojdbc6.jar`.
     – The host name of the database server. The default is `localhost`.
     – The port number used for the database. The default is 1521.

10. If you use the **bpeconfig.jacl** tool in batch mode with the -createEventCollector yes option, plan one of the following:
    - The -createDB yes option causes the tool to run the SQL script that **bpeconfig.jacl** generates. You can use the -dbSchema parameter to specify a schema qualifier for the BPEDB database, and you can use the -reportSchemaName and -reportDataSource parameters to make the Business Process Choreographer Explorer reporting function use a different database rather than using the BPEDB database.
    - The -createDB no option prevents the tool from running the SQL script that it generates. The generated SQL files are based on the standard SQL files that are provided for your database, but with all configuration parameters that are provided to the bpeconfig.jacl tool pre-filled in the SQL file, which minimizes the customization necessary. Plan that you or your database administrator will customize the generated SQL script that creates the database objects before running it. For more information about the tool and other database parameters, see "Using the bpeconfig.jacl script to configure Business Process Choreographer" on page 434.

11. If you will use administrative console's **Business Process Choreographer event collector page** to create the database tables, plan one of the following:
    - For all database types except for DB2 on z/OS, you can use the Create tables option to cause the tool to create the default schema in the specified database the first time that Business Process Choreographer accesses the database.
    - If you want to run an SQL script to prepare the database tables, do not use the Create tables option. Plan that you or your database administrator will customize a copy of the SQL script that creates the database objects before running it. This option is most suitable for a production system.

12. If you want to preview the SQL script for your database, so that you can plan what customizations you will make: Locate and view the `createSchema_Observer.sql` file for your database, but do not modify it. The SQL files are located in:

- **Windows** On Windows platform:*install_root*\dbscripts\ProcessChoreographer*database_type*\ *database_name**database_schema*
- **Linux** **UNIX** On Linux, UNIX platforms (and in the UNIX System Services (USS) on z/OS):*install_root*/dbscripts/ProcessChoreographer/*database_type*/*database_name*/ *database_schema*

Where *database_type* is one of the following:
- DB2
- DB2zOS
- Oracle

Note: If you use the `bpeconfig.jacl` tool to configure Business Process Choreographer, plan to use the SQL script that the tool generates, which does not need to be edited to substitute values for placeholders for configuration parameters. The generated scripts are only available after running the tool, but they are based on the scripts in the locations listed above. You will still have to edit the generated script file if you want to customize the table space allocations. Alternatively, you can use the database design tool to generate the SQL scripts.

You have planned the reporting database.

Planning the messaging engine database:

For high-load setups, where database logging might become a bottleneck, you can improve performance by using a separate database for the messaging engine for the Business Process Choreographer bus. To achieve the best performance for long-running processes, tune the messaging system for maximum performance of persistent messages.

You can use the same messaging database for each messaging engine for the Service Component Architecture (SCA) system bus, each messaging engine for the SCA application bus, each messaging engine for the Common Event Infrastructure bus, and each messaging engine for the Business Process Choreographer bus. The database should be accessible to all members of the cluster that hosts the message engine to ensure failover availability of the message engine. If performance is important, plan to use a dedicated database for the Business Process Choreographer messaging engine, rather than using the default MEDB that is used for the SCA bus and applications.

1. If you want to use WebSphere MQ, you must use the bpeconfig.jacl configuration script to configure Business Process Choreographer. Using WebSphere MQ is deprecated.
2. If you use the bpeconfig.jacl configuration script to configure Business Process Choreographer, Business Process Choreographer will use the same database as a message store that is used by SCA. Business Process Choreographer will use its own schema in the same database.
3. If you use the administrative console's Business Process Choreographer configuration page, if you want to use the default configuration that is based on the SCA message store settings, plan to select the **Use the default configuration** check box, otherwise, plan the following configuration parameters:
   - Local or remote bus member location.
   - The name of the database. The default is `BPEME`.
   - The schema name. The default is `MEDBPM00`.
4. Plan the following configuration parameters.
   a. Plan that the database will already exist before Business Process Choreographer is started.
   b. The host name or IP address of the database server, and the port number that it uses.
   c. The user name used to connect to the database and to create the schema. This is the user ID that you planned in Table 44 on page 94.

You have planned the database for the Business Process Choreographer messaging engine.

Planning the Business Process Archive database:

Each Business Process Archive Manager configuration requires its own archive database. If you have multiple Business Process Archive Manager configurations, then each of these needs its own database or database schema. The Business Process Archive database tables cannot be shared between multiple Business Process Archive Manager configurations.

1. Identify which Business Process Archive Manager this database will be used by.
2. Identify the source Business Process Choreographer configuration from which data will be archived to this Business Process Archive Manager.
3. Your archive database must be of the same type that is used by the Business Process Choreographer configuration.
   a. Decide the name of the new database. The default name is BPARCDB.
   b. Depending on the database type, identify the connection information such as the hostname, port number, and user ID.

      Note: If you are using a DB2 for z/OS database, and you want to use the same DB2 subsystem for both the archive database and the Business Process Choreographer database, you must use a different database name and a different user ID.

You have planned the database for the Business Process Archive Manager.

Planning for the Business Flow Manager and Human Task Manager:

The core of a Business Process Choreographer configuration consists of the Business Flow Manager and the Human Task Manager. You must plan their configuration parameters.

1. Make sure you know the Java Message Service (JMS) provider user ID that will be used as the run-as user ID for the Business Flow Manager message driven bean. In the administrative console, and in Table 45 on page 94, it is known as the **JMS API Authentication User**.
2. Make sure you know the Java Message Service (JMS) provider user ID that will be used as the run-as user ID for the Human Task Manager message driven bean. In the administrative console, and in Table 45 on page 94, it is known as the **Escalation User Authentication User**.
3. Make sure you know which groups or user IDs the security roles for administrator and monitor will map onto. For details, see Table 46 on page 95.
4. If you want the Human Task Manager to send e-mail notifications of escalation events, identify the host name or IP address where the Simple Mail Transfer Protocol (SMTP) e-mail server is located. Plan what the sender address should be for email notifications. If the e-mail service requires authentication, make sure you know the user ID and password to use to connect to the service.
5. Decide on the context root for the Web service binding of the API.
   - When configured on a server:
     – The default for the Business Flow Manager is /BFMIF_*nodeName_serverName*.
     – The default for the Human Task Manager is /HTMIF_*nodeName_serverName*
   - When configured on a cluster:
     – The default for the Business Flow Manager is /BFMIF_*clusterName*
     – The default for the Human Task Manager is /HTMIF_*clusterName*
6. If you are going to use the Business Process Choreographer Explorer, the Business Space, or a client that uses the Representational State Transfer (REST) API or the JAX Web Services API, decide on the context roots for the REST API and the JAX Web Services API.
   - The defaults for the Business Flow Manager are /rest/bpm/bfm and /BFMJAXWSAPI.
   - The defaults for the Human Task Manager are /rest/bpm/htm and /HTMJAXWSAPI.
   - When configured on a server, or on a single cluster, or on multiple clusters that are mapped to different Web servers, you can use the default values.

- When configured in a network deployment environment on multiple deployment targets that are mapped to the same Web server, do not use the default values. The context root for each Business Process Choreographer configuration must be unique for each combination of host name and port. You will have to set these values manually using the administrative console after configuring Business Process Choreographer.

7. Decide whether you want to initially enable audit logging for the Business Flow Manager, or Human Task Manager, or both.

8. If you are going to use the Business Process Choreographer Explorer reporting function, decide whether you want the Business Flow Manager to be initially configured to generate Common Event Infrastructure logging events.

You have planned all the initial configuration parameters for the Business Flow Manager and Human Task Manager. You can change any of these setting anytime later using the administrative console.

Planning for the people directory provider:

Plan the people directory provider, people substitution, virtual member manager, and Lightweight Directory Access Protocol (LDAP) settings for Business Process Choreographer.

1. If you are going to use human tasks, decide which people directory providers you will use:

   Virtual member manager (VMM) people directory provider
   The VMM people directory provider is ready to use federated repositories (also known as virtual member manager) as is preconfigured for WebSphere security – using a file repository. If you want to use a different user repository with federated repositories, you will need to reconfigure federated repositories. The VMM people directory provider supports all Business Process Choreographer people assignment features including substitution. It relies on the features provided by federated repositories, such as support for different repository types, such as LDAP, database, file based, and property extension repository.

   To use the VMM people directory provider requires that you have configured federated repositories for WebSphere Application Server security. You can associate federated repositories with one or more user repositories, based on a file, LDAP, or a database. For more information about this, see Managing the realm in a federated repository configuration. For more information about using federated repositories, see IBM WebSphere Developer Technical Journal.

   Lightweight Directory Access Protocol (LDAP) people directory provider
   This people directory provider must be configured before you can use it. Perform the planning in step 2.

   System people directory provider
   This people directory provider can be used without configuring it. Do not use this provider for a production system, it is only intended for application development testing.

   User registry people directory provider
   This people directory provider can be used without configuring it. Depending on the WebSphere security realm definition, the user registry can use one of the following repositories:
   - Federated repository – which can use the following:
     – File registry
     – One or more LDAPs
     – One or more databases
   - Standalone LDAP
   - Standalone custom
   - Local operating system

2. If you are going to use the Lightweight Directory Access Protocol (LDAP), plan the following.

a. You might need to customize your own version of the `LDAPTransformation.xsl` file. For the location of that file and a list of properties that you might need to customize, see "Configuring the LDAP people directory provider" on page 474.

b. Plan the following LDAP custom properties:

LDAP plug-in property	Required or optional	Description
AuthenticationAlias	Optional	The authentication alias used to connect to LDAP, for example, `mycomputer/My LDAP Alias`. You must define this alias in the administrative console by clicking **Security** > **Secure administration, applications, and infrastructure** > **Java Authentication and Authorization Service** > **J2C Authentication Data**. If this alias is not set or if AuthenticationType is not set to **simple** then an anonymous logon to the LDAP server is used.
AuthenticationType	Optional	If this property is set to `simple`, for simple authentication, then the AuthenticationAlias parameter is required. Otherwise, if it is not set, anonymous authentication is used.
BaseDN	Required	The base distinguished name (DN) for all LDAP search operations, for example, `o=mycompany, c=us`. To specify the directory root, specify an empty string using two single quotes, `''`.
Casesentiveness ForObjectclasses	Optional	Determines whether the names of LDAP object classes are case-sensitive.
ContextFactory	Required	Sets the Java Naming and Directory Interface (JNDI) context factory, for example, `com.sun.jndi.ldap.LdapCtxFactory`
ProviderURL	Required	This Web address must point to the LDAP JNDI directory server and port. The format must be in normal JNDI syntax, for example, `ldap://localhost:389`. For SSL connections, use the LDAP's URL. For a high availability configuration, where you have two or more LDAP servers that maintain mirrored data, plan to specify a URL for each LDAP server and use the space character to separate them.
SearchScope	Required	The default search scope for all search operations. Determines how deep to search beneath the baseDN property. Specify one of the following values: `objectScope`, `onelevelScope`, or `subtreeScope`
additionalParameter Name1-5 and additionalParameter Value1-5	Optional	Use these name-value pairs to set up to five arbitrary JNDI properties for the connection to the LDAP server.

3. If you are going to use the virtual member manager, plan the following.

   a. You might need to customize your own version of the `VMMTransformation.xsl` file. For the location of that file and a list of properties that you might need to customize, refer to "Configuring the Virtual Member Manager people directory provider" on page 473.

4. If you want to use people substitution, consider the following:

   - You must use the VMM people directory provider. The LDAP, system, and user registry people directory providers do not support people substitution.

   - If you are going to use people substitution in a production environment, plan to use the VMM Property Extension Repository to store the substitution information. The Property Extension Repository and, implicitly, the selected database must be unique and accessible from within the whole cell. As the BPEDB database is not necessarily unique within a cell, BPEDB cannot be used. You can use the common database, WPSRCDB, to host the Property Extension Repository, however, for a production environment, it is recommended to use a database that is independent of other Process Server databases.

- To use people substitution in a single-server test environment, you can store people substitution information in the internal file registry that is configured for federated repositories.

You have planned the people directory provider and people assignment options.

Planning for the Business Process Choreographer Explorer and Business Process Archive Explorer:

Plan the configuration options and parameters for the Business Process Choreographer Explorer and Business Process Archive Explorer.

If you will use the Business Process Choreographer Explorer or Business Process Archive Explorer you can either configure them at the same time as you configure Business Process Choreographer or Business Process Archive Manager, or you can do it later.

The reporting function is optional, and can be used with Business Process Choreographer Explorer and Business Process Archive Explorer.

1. Decide how many Business Process Choreographer Explorer and Business Process Archive Explorer instances you want to configure and whether they will provide the reporting function. You can easily create the first instance while configuring Business Process Choreographer or Business Process Archive Manager.

   - Because each Business Process Choreographer Explorer instance can only connect to one Business Process Choreographer configuration, it makes sense to set up a Business Process Choreographer Explorer instance for each Business Process Choreographer configuration.

   - Similarly, because each Business Process Archive Explorer instance can only connect to one Business Process Archive Manager configuration, it makes sense to set up a Business Process Archive Explorer instance for each Business Process Archive Manager configuration.

   - You might want to have two or more differently customized Business Process Choreographer Explorer or Business Process Archive Explorer configurations that connect to the same Business Process Choreographer or Business Process Archive Manager. You can customize each version independently, for more information about what you can customize, see Customizing Business Process Choreographer Explorer or Business Process Archive Explorer.

   - Because each Business Process Choreographer Explorer instance's reporting function can only read data from one Business Process Choreographer event collector, plan to configure equal numbers of Business Process Choreographer Explorer instances with the reporting function as there are Business Process Choreographer event collectors.

   - If you configure the reporting function for Business Process Choreographer Explorer, a Business Process Archive Explorer instance can provide the same reporting functions by connecting to the same reporting database.

2. For each Business Process Choreographer Explorer and Business Process Archive Explorer instance that you want, plan the following:

   a. The deployment target where you will configure the instance.

      - You can configure multiple Business Process Choreographer Explorer and Business Process Archive Explorer instances on each server or cluster. Whether an instance behaves like a Business Process Choreographer Explorer or Business Process Archive Explorer actually depends on the configuration that the instance connects to.

      - You can create the instances on any deployment target regardless of where there are event collector configurations.

   b. The context root. It must be unique within the cell. The default for the Business Process Choreographer Explorer is /bpc. The default for the Business Process Archive Explorer is /bpcarchive.

   c. The URL for the Business Process Choreographer Explorer that will, for example, be inserted in escalation e-mails.

d. If you are planning to configure a Business Process Choreographer Explorer, plan the URL for the Business Flow Manager and Human Task Manager representational state transfer (REST) APIs endpoints. They must match the values for the context roots that you planned for the REST APIs. For example, if the context root for the Human Task Manager Web service is **/rest/bpm/htm**, the endpoint URL for the Human Task Manager REST API endpoint would be **http://*hostname:port*/rest/bpm/htm**.

e. The maximum number of results to be returned for a query - the default is 10000.

f. The deployment target (server or cluster) of the Business Process Choreographer or Business Process Archive Manager instance that this Business Process Choreographer Explorer or Business Process Archive Explorer will connect to.

g. If you will use the reporting function with Business Process Choreographer Explorer or Business Process Archive Explorer, perform "Planning the Planning the Business Process Choreographer Explorer reporting function (deprecated)." You can also plan and configure it later.

You have planned the configuration options for the Business Process Choreographer Explorer and Business Process Archive Explorer.

Planning the Planning the Business Process Choreographer Explorer reporting function (deprecated):

The Business Process Choreographer Explorer reporting functionality is deprecated. To monitor and report on BPEL processes, use IBM Business Monitor.

This topic describes planning to configure the Business Process Choreographer Explorer reporting function and event collector.

If you will use the Business Process Choreographer Explorer reporting function, you can either configure it when you configure Business Process Choreographer Explorer, or you can do it later.

Note: Although configuring an event collector for the Business Process Archive Manager is not supported, the Business Process Archive Explorer can also provide the reporting function by using an existing archive database data source that was setup for an event collector for a Business Process Choreographer configuration.

1. If you do not want all Business Process Choreographer Explorer users to have access to the reporting function, plan to configure a separate Business Process Choreographer Explorer instance for the reporting function, and make it inaccessible to normal users.

2. Understand the purpose and relationships between the different topology elements of the Business Process Choreographer Explorer reporting function.

   The Business Process Choreographer Explorer reporting function.
   Before version 6.2, this functionality was available as the Business Process Choreographer Observer. Since version 6.2, this feature has been integrated, and can be used in both the Business Process Choreographer Explorer and the Business Process Archive Explorer. It is available on the **Reports** tab. You must configure the Business Process Choreographer Explorer reporting function before you can use it.

   The event collector application.
   This application must be deployed on a server or cluster where the Common Event Infrastructure (CEI) server is configured. You can only have one event collector on each CEI deployment target. It does not need to be deployed where Business Process Choreographer has been configured. It receives business process events from CEI, transforms them, and writes them to the reporting database.

   The reporting database.
   The event collector and Business Process Choreographer Explorer reporting function exchange information by using the same database. For non-production systems, the database can be shared with other components.

Your choices are independent of the topology you have for your Business Process Choreographer setup. For more insight into the possibilities, see "Business Process Choreographer Explorer reporting function overview (deprecated)" on page 73.

3. Identify the purpose of your setup, your system requirements, and the topology implications.

   Simple setup
   For simpler configuration and administration, but lower performance, deploy the event collector application on the same deployment target as you have the Business Process Choreographer Explorer and CEI configured on, and use a local database system.

   High load production system: network deployment
   Use a cell of multiple nodes, with multiple clusters. Deploy instances of the Business Process Choreographer Explorer on deployment targets in the cell. Deploy the event collector application on the cluster where you have configured the Common Event Infrastructure (CEI). Use a separate database server.

4. If you have not already planned the database for the Business Process Choreographer Explorer reporting function, perform "Planning the reporting database" on page 103.

5. For each event collector instance that you want to configure, plan the following:

   a. Decide where you will deploy it. You can only deploy one event collector instance per deployment target, and the deployment target must have CEI configured on it.

   b. Decide how you will configure this event collector instance:
      - Using the administrative console. For more information about this option, see "Using the administrative console to configure a Business Process Choreographer event collector" on page 515.
      - Using the interactive setupEventCollector tool. For more information about this option, see "Using the setupEventCollector tool to configure a Business Process Choreographer event collector" on page 513.
      - At the same time as creating a Business Process Choreographer configuration, using the bpeconfig.jacl script. The **-createEventCollector** option has the default value yes.

        Note: Do not use bpeconfig.jacl to configure the Business Process Choreographer Explorer reporting function for a high-performance system, because bpeconfig.jacl will configure the event collector and Business Process Choreographer Explorer reporting function applications on the same deployment target as the Business Process Choreographer configuration. For more information about this option, see "Using the bpeconfig.jacl script to configure Business Process Choreographer" on page 434.
        You cannot use bpeconfig.jacl to configure the event collector in interactive mode.

   c. Plan the data source:
      - If the Business Process Choreographer Explorer reporting function shares the same physical database as Business Process Choreographer, plan to use a separate data source for the reporting database, and plan its JNDI name.
      - Plan an authentication alias that will be used for the database.
      - Plan to create the data source with a cell scope.

   d. Plan the configuration parameters required when configuring the event collector:
      - The JNDI data source name for the reporting database.
      - The schema to be used for the database objects. The default is the user ID that is used to connect to the database.
      - The user ID to use to connect to the database. The default depends on the database: For DB2 the default is db2admin, for Oracle the default is system, and for other databases the default is the user ID of the logged on user.
      - The password for the user ID.

- If you are using a type 4 JDBC driver, also collect the host name or IP address of the database server and the port number that it uses
- Decide where the event collector will be deployed. The deployment target must have CEI configured on it, so if you have a separate cluster for CEI, plan to deploy the event collector on the same cluster.
- If you will deploy the event collector in a network deployment environment, know on which deployment target the messaging engine for the CEI bus is configured.
- If the CEI bus has security enabled, plan the JMS user ID that will be used to authenticate with the CEI bus.
- Decide whether you want to enable CEI event logging for business events when configuring the event collector, or whether you will enable it later using the administrative console or by running a script.

e. Plan the runtime configuration values, which you might need to customize to suit your needs after configuring the event collector:
- BpcEventTransformerEventCount
- BpcEventTransformerMaxWaitTime
- BpcEventTransformerToleranceTime
- ObserverCreateTables
- If the authentication alias user ID will not own the database schema, plan the ObserverSchemaName.

For more information about these values, see "Changing configuration parameters for the Business Process Choreographer Explorer reporting function" on page 518.

6. For each Business Process Choreographer Explorer reporting function that you configure, plan the following:
- Decide how you will configure this instance:
  – At the same time as creating the Business Process Choreographer Explorer, using the administrative console page for the Business Process Choreographer Explorer. For more information about this option, see "Using the administrative console to configure the Business Process Choreographer Explorer reporting function" on page 517.
  – At the same time as creating the Business Process Choreographer Explorer, using the `clientconfig.jacl` script.
  – At the same time as creating a Business Process Choreographer configuration, using the `bpeconfig.jacl` script.

    Note: Do not use `bpeconfig.jacl` to configure the Business Process Choreographer Explorer reporting function for a high-performance system, because `bpeconfig.jacl` will configure the event collector and Business Process Choreographer Explorer reporting function applications on the same deployment target as the Business Process Choreographer configuration. For more information about this option, see "Using the bpeconfig.jacl script to configure Business Process Choreographer" on page 434.
- The schema name for the reporting database.
- The JNDI name for the data source that can be used by a Business Process Choreographer Explorer or Business Process Archive Explorer to connect to the reporting database to provide the reporting functionality.

7. If you will use the `bpeconfig.jacl` script to configure Business Process Choreographer:
- When the script is run in batch mode, the default is that it will also configure the event collector and Business Process Choreographer Explorer applications, and that they will be configured on the same deployment target as the Business Process Choreographer configuration.

- If you do not want `bpeconfig.jacl` to configure one or both of the event collector and Business Process Choreographer Explorer, plan to use one or both of the `bpeconfig.jacl` options **-createEventCollector no** and **-createExplorer no**, which prevent `bpeconfig.jacl` from configuring them.

You have planned the configuration options for the Business Process Choreographer Explorer reporting function and event collector.

Planning for the Business Process Archive:

If you configure a Business Process Archive Manager, you can move the data associated with completed process instances and human tasks from the BPEDB database to a separate archive database.

To familiarize yourself with the Business Process Archive Manager elements, architecture, and possible configurations, read "BPEL process archiving overview" on page 75.

The Business Process Archive Manager requires its own database. To access the archived process instance and human task data, you can either use the Business Process Archive Explorer or use the Process Archive Manager EJB API to allow a custom client to access the archived data. If you do not perform any database cleanup procedures or archiving, your runtime database will steadily grow in size, which can result in a gradual deterioration in the database performance.

1. For each top-level BPEL process and top-level human task, consider the retention, archiving, and deletion requirements:
   a. How long should they be retained in the Business Process Choreographer database before being deleted or moved to the archive?
   b. If they will be archived, which archive will they be moved to, and who requires access to them?
   c. Make sure that your archive policy is coordinated with your cleanup procedures to ensure that no instances that should be archived are deleted from the Business Process Choreographer database. For more information about cleanup procedures, refer to Cleanup procedures for Business Process Choreographer.

2. Decide how many Business Process Archive Manager configurations you need. Keep the following in mind:
   - Each Business Process Archive Manager configuration can only be used to archive data from one Business Process Choreographer configuration.
   - You can have multiple Business Process Archive Manager configurations that archive data from the same Business Process Choreographer configuration.
   - Federation of data between Business Process Archive databases is not a feature that is built into IBM Business Process Manager Advanced.
   - An example of when you might want multiple Business Process Archive Manager configurations is when process instances and task instances that belong to different applications are processed on the same Business Process Choreographer configuration.

3. For each Business Process Archive Manager configuration, perform "Planning for the Business Process Archive Manager" on page 115.

4. Decide how many Business Process Archive Explorer configurations you need. Unless you are going to develop your own custom client that can connect to and work with Business Process Archive Manager configurations, you probably need one Business Process Archive Explorer configuration for each Business Process Archive Manager configuration.

5. For each Business Process Archive Explorer configuration, perform "Planning for the Business Process Choreographer Explorer and Business Process Archive Explorer" on page 110.

6. If you want your own custom client to access archived process instances and human tasks, refer to Business Process Archive Manager EJB API support.

Planning for the Business Process Archive Manager:

Configuring the Business Process Archive Manager requires a database, to which completed process instances and human tasks can be moved.

1. For the Business Process Archive Manager, plan the following:

    a. Identify the deployment target of the source Business Process Choreographer configuration that this Business Process Archive Manager will serve.

    b. Identify the deployment target for the Business Process Archive Manager. Keep in mind that it cannot coexist on a deployment target with any Business Process Choreographer or other Business Process Archive Manager configuration. However, it must be in the same cell as the Business Process Choreographer configuration from which it will archive instances. Consider configuring it on a support cluster, if you have one.

    c. Plan to configure the Service Component Architecture (SCA) on the deployment target of the Business Process Archive Manager before you configure run the script to configure Business Process Archive Manager. You need to know the remote bus member location of the SCA configuration that is used by the Business Process Choreographer configuration. Do not plan any other values for configuring SCA for the Business Process Archive Manager, because you must use the prefilled values for the datastore settings.

    d. You can only configure the Business Process Archive Manager using the bpeconfig.jacl script. Plan all the configuration parameters. The following table contains some guidelines. For detailed information about these parameters, including default values, see "bpeconfig.jacl script file" on page 442.

Table 50. Planning bpeconfig.jacl parameters for a Business Process Archive Manager configuration

Condition	Planning action
Only if the deployment manager is not running:	Include the wsadmin option: `-conntype NONE`

If the deployment manager is running and administrative security is enabled:	Include the following wsadmin parameters for a user ID that is authorized to run **wsadmin**:
	`-user   userName`
	`-password   userPassword`

If you are not using the default profile:	Include the wsadmin parameter: `-profileName profileName`
If you want to run the script interactively and be prompted for all mandatory and optional parameters:	Invoke the script and only specify any necessary wsadmin parameters (listed above in this table), but none of the script parameters listed below in this table. By specifying no script parameters, **-promptMode** defaults to **ASK**.
If you want to run the script interactively and be prompted for all mandatory and optional parameters, but also specify some script parameters:	Specify any necessary wsadmin parameters and any script parameters, but also include the option: `-promptMode ASK` Any script parameters that you specify are also prompted for, and the values you provided are offered as defaults, which you can accept or change.
If you want to run the script interactively and want any missing optional script parameters to take their default values without being prompted for:	Specify any necessary wsadmin parameters and all mandatory script parameters, but also include the option: `-promptMode USE_DEFAULT` If a mandatory parameter is missing the script switches to **-promptMode ASK** mode.

Table 50. Planning bpeconfig.jacl parameters for a Business Process Archive Manager configuration (continued)

Condition	Planning action
If you want any missing mandatory parameters to cause the script to fail, rather than prompting for them:	Include the option: `-promptMode FAIL_IF_MISSING` Use this option if the script is invoked without the possibility to get input from the console.
If you want to use a response file that specifies parameter values for the script:	Include the option: `-options responseFile` For more information, refer to the description of the **-options** parameter in "bpeconfig.jacl script file" on page 442.
To create a Business Process Archive Manager configuration:	Include the option: `-operationMode ARCHIVE`

If you are not creating the configuration on the default server:	Include either the parameter:
	
	`-cluster clusterName`
	
	or both parameters:
	
	`-node nodeName`
	`-server serverName`

For every Business Process Archive Manager configuration:	Include the required parameters for authorization:
	
	`-jmsBFMRunAsUser userID`
	`-jmsBFMRunAsPwd password`
	`-jmsHTMRunAsUser userID`
	`-jmsHTMRunAsPwd password`
	
	For the following administrator and monitor parameter pairs ending in *Users* and *Groups* you must specify either one or both parameters.
	
	`{-adminUsers userList |`
	` -adminGroups groupList}`
	
	`{-monitorUsers userList |`
	` -monitorGroups groupList}`
	
	The administration job user ID and password are optional.
	
	`-adminJobUser userID`
	`-adminJobPwd password`

If you do not want to use the default context roots for the APIs:	Include the optional parameters for context roots:
	
	`-contextRootBFMWS contextRootBFMWS`
	`-contextRootBFMREST contextRootBFMREST`
	`-contextRootHTMWS contextRootHTMWS`
	`-contextRootHTMREST contextRootHTMREST`

Table 50. Planning bpeconfig.jacl parameters for a Business Process Archive Manager configuration (continued)

Condition	Planning action
Because you can either have the script file create the Business Process Archive database, or just have it generate the SQL script without running the scripts:	Use the option `-createDB { yes | no }` If you select yes, the bpeconfig.jacl script will generate and run an SQL file to create the database objects in the default table space, which is not suitable for a high-performance system. In this case also plan to stop the deployment manager and use the `-conntype NONE` option. If you select no, and the database does not already exist, then you or your database administrator must run the generated SQL script. For a high-performance system, specify no, because you will need to customize the SQL script before running it. Also specify no if you do not have the authority to create the database yourself, so that you can provide the SQL script to your database administrator to customize and run. You must also specify no if you are using a database which has restricted support. **Restriction:** The script cannot create the following types of databases: • DB2 for z/OS • Oracle • A remote Microsoft SQL Server If you select yes and you are running the script in connected mode, creating the database or schema can fail if it takes longer than the a default timeout of 3 minutes. How to change the timeout is described in Connection timeout when running a wsadmin script .

Because every Business Process Archive Manager configuration requires a database:	Include the parameter:
	
	`-dbType databaseType`
	
	Also provide the parameters required for your database type (see "bpeconfig.jacl script file" on page 442 for details):
	
	`-dbVersion version`
	`-dbHome databaseInstallPath`
	`-dbJava JDBCDriverPath`
	`-dbName databaseName`
	`-dbUser databaseUser`
	`-dbPwd databasePassword`
	`-driverType JDBCDriverType`
	`-driverVersion JDBCDriverVersion`
	`-dbTablespaceDir databaseTablespacePath`
	`-dbServerName databaseServerName`
	`-dbServerPort databaseServerPort`
	`-dbStorageGroup DB2zOSStorageGroup`
	`-dbConnectionTarget DB2zOSSubSystem`
	`-dbSchema schemaQualifier`
	
	When running the script in batch mode on a cluster, if your database requires the `-dbJava` parameter, specify the parameter for each node that hosts a cluster member in the following way:
	
	`-dbJava.nodeName JDBCDriverPath`
	`   _on_nodeName`
	
	Note: If you are using one of the following databases, bpeconfig.jacl can also create the database instance:
	• A local DB2 for Linux, UNIX, or Windows

Table 50. Planning bpeconfig.jacl parameters for a Business Process Archive Manager configuration (continued)

Condition	Planning action
Because every Business Process Archive Manager configuration uses a JMS provider:	Include the parameter: `-mqType { WPM | MQSeries }` If you specify **WPM**, the Business Process Archive Manager uses the same messaging engine that is used by the associated Business Process Choreographer configuration. **Note:** The MQSeries® option to use WebSphere MQ is deprecated.

If you use the `-mqType MQSeries` option:	Include the following parameters:
	
	`-createQM { yes | no }`
	`-qmNameGet getQueueManagerName`
	`-mqClusterName mqClusterName`
	`-qmNamePut putQueueManagerName`
	`-mqHome MQInstallationDirectory`

If you do not want a Business Process Archive Explorer on the same deployment target as the Business Process Archive Manager:	Include the parameter: `-createExplorer no` **Note:** You can run the clientconfig.jacl script later to create Business Process Archive Explorer configurations.

If you want a Business Process Archive Explorer on the same deployment target as the Business Process Archive Manager:	Include the following parameters.
	
	`-createExplorer yes`
	`-restAPIBFM restAPIURL`
	`-restAPIHTM restAPIURL`
	
	Also include any of the following optional parameters:
	
	`-contextRootExplorer explorerContextRoot`
	`-hostName explorerVirtualHostname`
	`-maxListEntries maximum`
	`-remoteCluster clusterName`
	`-remoteNode nodeName`
	`-remoteServer serverName`
	
	If you do not specify these parameters, the default values are used.

If you are configuring a Business Process Archive Explorer, but you do not want it to provide the reporting function:	Include the option: `-reportFunction no`

If you are configuring a Business Process Archive Explorer, and you want it to provide the reporting function by connecting to an existing reporting database:	Include the options:
	
	`-reportFunction yes`
	`-reportAtSnapshotRange number`
	`-reportCreateTables no`
	`-reportDataSource jndiName`
	`-reportSchemaName schemaName`

Table 50. Planning bpeconfig.jacl parameters for a Business Process Archive Manager configuration (continued)

Condition	Planning action

Because not all bpeconfig.jacl parameters apply to the Business Archive Manager configuration	Do not plan values for the following parameters:
	
	`-createEventCollector`
	`-explorerHost`
	`-mailPwd`
	`-mailServerName`
	`-mailUser`
	`-medbPwd`
	`-medbUser`
	`-mqCreateTables`
	`-mqPwd`
	`-mqSchemaName`
	`-mqUser`
	
	If you provide any of these parameters, they are ignored.

2. If you have not already planned the process archive database for this Business Process Archive Manager, perform "Planning the Business Process Archive database" on page 107.

You have planned a Business Process Archive Manager configuration and its database.

Planning for a remote client application:

Planning for a remote Business Process Choreographer client application that uses the Business Process Choreographer APIs and runs on a Process Server client installation.

If you want an application to use the Business Process Choreographer APIs, you can use a Process Server client installation to run the applications remotely against a full Process Server installation. The client is easier to configure and administer than a full Process Server installation.

The Process Server client installation does not containProcess Server profile templates, but needs to augment the underlying WebSphere Application Server profile with Feature Pack for SCA Version 1.0 with SDO 2.1.1. This means that you can even install the Process Server client on top of an existing WebSphere Application Server installation that has federated profiles and those federated WebSphere Application Server profiles can take advantage of the Process Server client functionality immediately. This scenario is not possible with the full Process Server because IBM Business Process Manager Advanced does not support augmentation of already federated profiles.

1. Plan to install a Process Server client.
   - If you want WebSphere Portal Server to access Business Process Choreographer, you must have a compatible Process Server client installed.

Table 51. Client versions that WebSphere Portal Server can use to access Business Process Choreographer

WebSphere Portal Server version	WebSphere Process Server (prior to version 7.5) or Process Server client version			
	6.1.0.1	6.1.2	6.2	7.0
6.1.0.1	Yes	Yes	No	No
6.1.0.2	Yes	Yes	Yes	No
6.1.0.3	Yes	Yes	Yes	No
6.1.0.5	Yes	Yes	Yes	No

   - Any existing profiles, including already federated profiles, can use the Process Server client immediately, because the client installation does not augment the base profile.

- If there is no existing WebSphere Application Server installation, a WebSphere Application Server network deployment installation will be created.

2. Decide which type of Business Process Choreographer client application you will use:
   - Custom client application
   - Business Process Choreographer Explorer

   Note: If you use customized JavaServer Pages (JSP), as described in Developing JSP pages for task and process messages, make sure that you know where they are located.

3. If you are going to develop a custom client application that will use Business Process Choreographer, plan which interfaces the application will use. You can handle processes and tasks using one of the following:
   - Web services API, Java Messaging Service (JMS) API or representational state transfer (REST) API – remote client applications that are based on these APIs do not need any WebSphere Process Server installation.
   - JavaServer Faces (JSF) components
   - Enterprise JavaBeans (EJB) API

   Note: If you develop a client application, which uses the Business Process Choreographer EJB APIs, it must be packaged in the way that is described in Accessing the remote interface of the session bean.

4. Decide or identify the type of cell where the Process Server client will be installed:
   a. In a cell where a managed server or cluster is located, on which Business Process Choreographer is configured, the default configuration of the Remote Artifact Loader (RAL) allows the unsecured transmission of artifacts between the client and the server. This is known as the "single-cell" scenario.
   b. In a cell that does not have a managed server or cluster with Business Process Choreographer configured on it, there are different deployment managers. This is known as the "cross-cell" scenario. If your client application uses the EJB API, you must define a namespace binding so that the client application can locate the server or cluster where Business Process Choreographer is configured.

You have planned for a remote Business Process Choreographer client application.

Planning to configure the messaging engine database

The messaging engine database specifications list supported database type, scripts and their locations, profile creation types, and necessary user ID privileges.

The messaging engine database is used to store operating information. Essential objects that the messaging engine needs for recovery in the event of a failure are also stored.

The messaging engine database is used by the message engines for Service Component Architecture (SCA) modules, Business Process Choreographer, and Common Event Infrastructure (CEI). The default database name for the SCA messaging engine is SCADB. For the other messaging engines, the default database name is MEDB. The default schema name is IBMWSSIB.

Important: Multiple schemas are not supported by all database types. For more information, see your database documentation.

In a stand-alone environment, you can use the administrative console to configure your SCA messaging engine. In a patterned network deployment environment, the messaging engines are configured during deployment environment creation. For a custom network deployment environment, you need to configure the messaging engines manually.

You have control over the messaging engine databases. For example, you can create a database for each messaging engine or you can use a single database for all the messaging engines. Each messaging engine must have either its own database or a schema.

Supported database types

The messaging engine database can use the following database products:

Table 52. Supported database products

Database Types	Considerations
DB2 Express	Used as the default database type for a stand-alone profile.
DB2 Universal	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 Data Server	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 for z/OS v8 DB2 for z/OS v9	**Important:** When creating a profile for a server that uses DB2 for z/OS v9, the server must be able to connect to the DB2 database.Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
Microsoft SQL Server (DataDirect)	
Microsoft SQL Server (Microsoft)	
Oracle	You need system database administrator privileges to create the database, tables, and schemas. If you do not have these privileges, you might receive errors when you create or access the tables and schemas.

User ID privileges

The user credentials that you provide in the Profile Management Tool must have the permissions necessary to create table spaces, tables, schemas, indexes, and stored procedures. For the **Create new database** option, the user ID must have the necessary privileges to create a database. If the user who is running the script has the authority to create tables, the script does not require an authentication ID within the script. For more information, see "Users and schemas for databases" and "Database privileges".

For a network deployment environment, you need all necessary permissions for user privileges specified during configuration from the administrative console.

Important: For DB2 V9.7, grant the appropriate authority to the newly created user, because the user creation process does not automatically grant the user the necessary authority.

Database Management Service (DBMS) instances

Each messaging engine has its own database or schema:
- One is used to host each messaging engine for the Service Component Architecture system bus.
- Another is used to host each messaging engine for the Service Component Architecture application bus.
- Another is used to host each messaging engine for the Common Event Infrastructure bus.
- Another is used to host each messaging engine for the Business Process Choreographer bus.

The following list contains the naming conventions for the JDBC data source that the messaging engine uses to interact with the database:

- System bus: *<node><server>|<cluster>*-SCA.SYSTEM.*<cell>*.Bus
- Application bus: *<node><server>|<cluster>*-SCA.APPLICATION.*<cell>*.Bus
- CEI bus: *<node><server>|<cluster>*-CEI.*cellName*.BUS
- BPC bus: *<node><server>*.-BPC.*<cell>*.Bus

Configuration actions during profile creation

Network deployment

No messaging engine databases are created automatically. After the profile is created, you can use the Configure your Network Deployment Environment guided activity to configure a server or a cluster for SCA. To access this guided activity from the administrative console of the deployment manager, expand **Guided Activities** and click **Configure your Network Deployment Environment**.

You can view the SCA configuration of your server from the `Application servers` > *servername* > `Service Component Architecture` panel of the administrative console.

The following administrative tasks are performed during profile creation:

- Remote Destination Location:
  - configSCAAsyncForServer, configSCAJMSForServer (remoteMELocation is true)
  - configSCAAsyncForCluster, configSCAJMSForCluster (remoteMELocation is true)
- Local Destination Location:
  - configSCAAsyncForServer, configSCAJMSForServer
  - configSCAAsyncForCluster, configSCAJMSForCluster

For more information about these tasks, see "configSCAAsyncForCluster command" and "configSCAAsyncForServer command".

When you perform asynchronous SCA configuration for a server or cluster, a messaging engine is created for the SCA system bus. When you perform the JMS element of the SCA configuration for a server or cluster, a messaging engine is created for the SCA application bus. For both messaging engines, you must create a database or schema.

The Business Process Choreographer messaging engines are created during Business Process Choreographer configuration. Business Process Choreographer is configured for patterned deployment environments only. For more information, see Planning the topology, setup, and configuration path.

To configure the Common Event Infrastructure messaging engine, use the `deployEventService` administrative task to configure the event server and the Common Event Infrastructure bus.

SQL scripts

No SQL scripts are created as part of the product. You can use existing base WebSphere Application Server scripts to create database and tables if necessary. To create the MEDB manually before it is configured, use the **Application servers** > *servername* > **Service Component Architecture** panel of the administrative console.

JDBC provider

Service Component Architecture

The JDBC provider is reused when the JDBC provider implementation class has to match with the one chosen in the advanced configuration. If the same database types are used, then the implementation classes usually match. If no matching JDBC provider is found in the

resource.xml file, then the `jdbc-resource-provider-templates.xml` file in the `templates/system` directory (profiles configuration) is searched for a matching JDBC provider. The provider is matched also against the implementation class.

Business Process Choreographer

The Business Process Choreographer reuses the JDBC provider for the SCA messaging engine. For more information, see Configuring Business Process Choreographer.

Common Event Infrastructure

The JDBC provider creation for messaging engine database is similar to the approach followed in the creation of the CEIDB database.

Data source names

- System bus: : _(*node.server*|*cluster*)-SCA.SYSTEM.*cell*.Bus/*cel/cluster/server/node*
- Application bus: _(*node.server*|*cluster*)-SCA.APPLICATION.*cell*.Bus/*cell/cluster/server/node*
- Common Event Infrastructure: _(*node.server*| *cluster*-CEI.*cellName*.BUS/*cluster/server/node*
- Business Process Choreographer:_(*node.server*|*cluster*)-BPC.*cell*.Bus/*cell/cluster/server/node*

Data source JNDI names

- System bus: jdbc/com.ibm.ws.sib/(*node.server*|*cluster*)-SCA.SYSTEM.*cell*.Bus/*cell/cluster/server/node*
- Application bus: jdbc/com.ibm.ws.sib/(*node.server*|*cluster*)-SCA.APPLICATION.*cell*.Bus/*cell/cluster/server/node*
- Common Event Infrastructure: Jdbc/ com.ibm.ws.sib /(*node.server*|*cluster*)-CEI.*cellName*.BUS/*cluster/server/node*
- Business Process Choreographer bus: jdbc/com.ibm.ws.sib/(*node.server*|*cluster*)-BPC.*cell*.Bus/*cell/cluster/server/node*

Restrictions

There are no known restrictions.

Tables

For information on the tables, see the topic "Data stores" in the WebSphere Application Server Network Deployment information center.

Exported scripts

You can use the **sibDDLGenerator** script in **WAS_INSTALL_ROOT/bin** to create the SQL scripts for messaging engines database. Use the **sibDDLGenerator** script for creating SQL scripts for use in production environment especially on the DB2 for z/OS platform. For more information, see the "The sibDDLGenerator command".

These scripts contain only basic create **database/tablespace/table** statements. A database administrator might still need to tailor these scripts to meet their database needs, especially on DB2 for z/OS.

Configuring messaging engine and server behavior when a data store connection is lost

The connection between a running messaging engine and its data store might sometimes be lost due to a failure or because you stop the database. You can determine the behavior of your system through a custom property on the messaging engine.

If you set the **sib.msgstore.jdbcFailoverOnDBConnectionLoss** custom property, you can enhance the automatic recovery of a highly available IBM Business Process Manager environment.

For information on the **sib.msgstore.jdbcFailoverOnDBConnectionLoss** property, including information how to set this property, see Configuring messaging engine and server behavior when a data store connection is lost.

Related information:

▣ Configuring messaging engine and server behavior when a data store connection is lost

Planning to configure the logger mediation database tables for WebSphere Enterprise Service Bus

You can find logger mediation database table specifications for WebSphere ESB. The specifications contain information about supported database types, script names and their locations, profile creation configuration actions, schema upgrades, and user ID privileges.

The logger mediation database tables are used by the Message Logger mediation primitive in WebSphere ESB. The Message Logger primitive stores message information in the common database. The common database is the default for the WebSphere ESB logger mediation database, but you can use an external database. During the profile augmentation phase, the system creates the ESB_MESSAGE_LOGGER_QUALIFIER variable, which is set to the value of the chosen common database schema qualifier.

The database is created automatically for a stand-alone configuration. You can use Data Definition Language (DDL) files to use additional databases for a stand-alone server configuration or for a network deployment environment.

For a stand-alone configuration that uses a DB2 for z/OS database, or for a managed node or deployment manager in a network deployment configuration, you must create the WebSphere ESB database and storage groups first. Then you can run the configuration script for IBM Process Server for z/OS.

Supported database types

The WebSphere ESB logger mediation database can use the following database products:

Table 53. Supported database products

Database Types	Considerations
DB2 Express	Used as the default database type for a stand-alone profile.
DB2 Universal	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 Data Server	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 for z/OS v8 DB2 for z/OS v9	**Important:** When creating a profile for a server that uses DB2 for z/OS v9, the server must be able to connect to the DB2 database.Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
Microsoft SQL Server (DataDirect)	
Microsoft SQL Server (Microsoft)	

Table 53. Supported database products (continued)

Database Types	Considerations
Oracle	You need system database administrator privileges to create the database, tables, and schemas. If you do not have these privileges, you might receive errors when you create or access the tables and schemas.

User ID privileges

The user credentials that you provide in the Profile Management Tool must have the permissions necessary to create table spaces, tables, schemas, indexes, and stored procedures. For the **Create new database** option, the user ID must have the necessary privileges to create a database. If the user who is running the script has the authority to create tables, the script does not require an authentication ID within the script. For more information, see "Users and schemas for databases" and "Database privileges".

Database Management Service (DBMS) instances

The common database is used for both stand-alone environments and network deployment environments at cell scope. However, you can manually create as many other instances as you require. Each message logger mediation primitive can be configured to use a different data source and therefore a different database.

Configuration actions during profile creation

For the stand-alone profiles and deployment manager profiles, the WebSphere ESB logger profile executes the `createTable` common database script in the common database. For more information, see "Common database specifications".

Stand-alone profile
> In a default stand-alone environment, a DB2 database named `EsbLogMedDB` is automatically created.

Network deployment environment
> The default WebSphere ESB database is not automatically selected during network deployment profile creation. You must select the default database or one of the supported databases.

SQL scripts

The `createTable_ESB.sql` SQL script is located in the *install_root*/dbscripts/CommonDB/*DBTYPE* directory.

The `createMessageLoggerResource.jacl` and `removeMessageLoggerResource.jacl` scripts are located in the *install_root*/bin directory, and can be used to create or delete tables in the requested database type.

JDBC provider

The common database JDBC provider and data source are used by default:

Data source name:
- **WPS DataSource**

Data source JNDI name:
- **jdbc/WPSDB**

You can configure the Message Logger mediation to use a different data source.

Restrictions

There are no known restrictions.

Tables

The WebSphere ESB logger mediation database uses the MSGLOG table in the common database.
However, you can choose not to use the common database, and use an external database instead.

Exported scripts

The database scripts are exported to the *install_root*/dbscripts/CommonDB/*DBTYPE*/*dbName* directory.

Schema upgrade scripts

No schema upgrade involved for MSGLOG table. When you migrate to IBM Business Process Manager
V6.1, IBM Business Process Manager continues to use the MessageLogger databases used in prior
releases. There is no support to migrate this data into the IBM Business Process Manager common
database.

If you want to maintain a single location for message information, you can perform one of the following
tasks:

* Manually move the data from the old database to the new database
* Continue to use the old database
* Use the `createMessageLoggerResource.jacl` script to move the data.

Planning to configure the selector and business rules group database

Use the selector and business rules group database specifications to find information about supported
database types, scripts and their locations, profile creation configuration actions, restrictions, table names,
and user ID privileges.

When you install an application containing selector or business rule artifacts, the server stores the
artifacts in database tables. You can then dynamically update them without changing the application. The
selector and business rules group components use a database to hold the selector and business rule
artifacts that are created in Integration Designer and installed on the server. If you change a selector
through the administrative console, or a business rule through the Business Rules Manager, the database
is updated with the latest information. The original artifacts in the enterprise archive (EAR) are not
synchronized with updates that are made after the application is installed.

Supported database types

The selector and business rules group database can use the following database products:

Table 54. Supported database products

Database Types	Considerations
DB2 Express	Used as the default database type for a stand-alone profile.
DB2 Universal	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 Data Server	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.

Table 54. Supported database products (continued)

Database Types	Considerations
DB2 for z/OS v8 DB2 for z/OS v9	**Important:** When creating a profile for a server that uses DB2 for z/OS v9, the server must be able to connect to the DB2 database.Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
Microsoft SQL Server (DataDirect)	
Microsoft SQL Server (Microsoft)	
Oracle	You need system database administrator privileges to create the database, tables, and schemas. If you do not have these privileges, you might receive errors when you create or access the tables and schemas.

User ID privileges

The user credentials that you provide in the Profile Management Tool must have the permissions necessary to create table spaces, tables, schemas, indexes, and stored procedures. For the **Create new database** option, the user ID must have the necessary privileges to create a database. If the user who is running the script has the authority to create tables, the script does not require an authentication ID within the script. For more information, see "Users and schemas for databases" and "Database privileges".

Database Management Service (DBMS) instances

Only one database instance is available in a stand-alone profile or network deployment configuration (server or cluster of servers). All selectors and business rules for the server in a stand-alone profile or in a cell use the same repository. There is no support for using separate database instances for different selectors or business rules.

Configuration actions during profile creation

Stand-alone profile
> During profile creation, the Common database uses **createTable** to create selector and business rules tables. If you choose the default configuration, the default database is DB2. However, you cannot use multiple servers because DB2 allows only one Java virtual machine to access the database at a time.

Deployment manager profile
> For network deployment configuration, the common database for the cell is set up with the appropriate tables for selector and business rule group components. All selectors and business rules for the server in a deployment manager or custom profile use this database.

SQL scripts

See the common database specifications for SQL script locations.

JDBC provider

The selector and business rules group database uses the common database data source and JBDC provider:

Data source name:
- **WPS DataSource**

Data source JNDI name:
* **jdbc/WPSDB**

Restrictions

If you uninstall applications that contain selectors or business rules from the server or cell, artifacts stored in the common database or RepositoryDB databases are not removed. For information on how to manually remove the artifacts, see "Removing business rule and selector data from the repository."

If you uninstall applications that contain selectors or business rules from a server or cell, artifacts stored in the common database are not removed. For information on how to manually remove the artifacts, see "Removing business rule and selector data from the repository."

Tables

For selectors and business rule groups, there are three tables that you can use to hold the artifacts:
* AppTimestamp
* ByteStore
* ByteStoreOverflow

Exported scripts

The scripts are exported to the same location as the scripts for the common database. For information on script locations, see "common database specifications".

Additional database configuration information

The topics in this section provide additional database configuration information for IBM Business Process Manager.

Users and schemas for databases

During the installation of IBM Business Process Manager, you can use the default schema name and user ID privileges to install your databases. However, your database design might require separate user ID and schema name privileges.

Review the provided scenarios to determine when and how to configure different schema names and user ID privileges when you install IBM Business Process Manager.

Scenario for a single user ID or schema name privileges

If you chose a default installation for your databases, IBM Business Process Manager requires a minimum of one user ID or schema name that can create tables and to select, insert, update, and delete rows in those tables. You can use the Profile Management Tool or the installer to create your databases.

The following table shows the default database configuration properties when you use DB2 as your database. Other databases have different default configuration properties for database configuration.

Table 55. Scenario: Single user ID or schema

Database tables	Default database name with DB2	User ID or schema name
Common database tables	WPRCSDB	IBM Business Process Manager provides a user ID during installation.
Business Process Choreographer	BPEDB	IBM Business Process Manager provides a user ID during installation.

Table 55. Scenario: Single user ID or schema (continued)

Database tables	Default database name with DB2	User ID or schema name
Messaging tables	MEDB	IBM Business Process Manager provides a schema name during installation.

If your database design has different properties, you might need multiple user ID and schema name privileges. The following scenarios show you how to apply the configuration to achieve your desired design. Even if your particular design is not in the provided scenarios, you can adapt some of the ideas to implement your particular design.

Scenario 1 for multiple user ID or schema name privileges

In this scenario, you use a schema name that is the same as the user ID privileges, but you do not use the default schema name or default user ID privileges. This single user ID can access all of the database and also create all needed tables. The following examples show scenario 1 privileges:

- Schema name: dog
- Schema name for SCA.SYSTEM ME : dogSYS
- Schema name for SCA.APP ME: dogAPP
- Schema name for Event ME: dogEvent
- Schema name for BPC ME: dogBPC
- User ID to create schemas: dog
- User ID to select, insert, update, and delete schemas: dog

The following table contains information about how to set up the schema name and user ID privileges with DB2 as your database. If you choose a different database, see their documentation for setting up schema names and user ID privileges.

Table 56. Scenario 1: Multiple user ID or schema

Database tables	Database name with DB2	Schema name	User ID to create tables	User ID to select, insert, update, and delete rows
Common database tables	You supply this value in the • Installation wizard • Profile Management Tool • Silent install • Silent profile creation	This schema name is the same as the user ID that is used to select, insert, update, and delete rows.	This value is the same as the user ID that is used to select, insert, update, and delete rows.	You supply this value in the • Installation wizard • Profile Management Tool • Silent install • Silent profile creation

Table 56. Scenario 1: Multiple user ID or schema (continued)

Database tables	Database name with DB2	Schema name	User ID to create tables	User ID to select, insert, update, and delete rows

Business Process Choreographer tables	You supply this value twice:
	1. In table creation scripts
	2. While configuring a deployment target using one of the following:
	  • Administrative console
	  • Installation wizard
	  • bpeconfig.jacl
		This schema name is the same as the user ID that is used to select, insert, update, and delete rows.	This value is the same as the user ID that is used to select, insert, update, and delete rows.	You supply this value twice:
				1. In table creation scripts
				2. While configuring a deployment target using one of the following:
				  • Administrative console
				  • Installation wizard
				  • bpeconfig.jacl

Scenario 2 for multiple user ID or schema name privileges

In this scenario, you use the same schema name and user ID to select, insert, update, and delete schemas. However, you use a different user ID to create the schemas. The following examples show scenario 2 privileges:

- Schema name: snow
- Schema name for SCA.SYSTEM ME: snowSYS
- Schema name for SCA.APP ME: snowAPP
- Schema name for Event ME: snowEvent
- Schema name for BPC ME: snowBPC
- User ID to create the schemas: rock
- User ID to select, insert, update, and delete schemas: snow

The following table contains information about how to set up the schema name and user ID privileges with DB2 as your database. If you choose a different database, see their documentation for setting up schema names and user ID privileges.

Table 57. Scenario 2: Multiple user ID or schema

Database tables	Database name with DB2	Schema name	User ID to create tables	User ID to select, insert, update, and delete rows

Common database tables	You supply this value twice:
	1. In table creation scripts
	2. During the IBM Business Process Manager configuration with one of the following:
	  • Administrative console
	  • Installation wizard
	  • Profile Management Tool
	  • Silent install
	  • Silent profile creation
	  • bpeconfig.jacl
	
	Restriction: If you execute the installer first, then you supply the value once because the generated scripts already contain the correct schema name and user ID values.
		The table creation scripts need to be modified with the schema name that allows reading and writing rows.	The table creation script needs to be modified with the user ID that allows table creation.	You supply the user ID during profile creation through one of the following:
				• Installation wizard
				• Profile Management Tool
				• Silent install
				• Silent profile creation

Business Process Choreographer tables	You supply this value twice:
	1. In table creation scripts
	2. While configuring a deployment target using one of the following:
	  • Administrative console
	  • Installation wizard
	  • bpeconfig.jacl
		The table creation scripts need to be modified with the schema name that allows reading and writing rows.	The table creation script needs to be modified with the user ID that allows table creation.	You supply the user ID during profile creation through one of the following:
				• Installation wizard
				• Profile Management Tool
				• Silent install
				• Silent profile creation

Scenario 3 for multiple user ID or schema name privileges

In this scenario, you use the same user ID to create all schemas. However, each schema has a different user ID to select, insert, update, and delete rows. The following list shows examples of privileges for Scenario 3:

- Schema name: waterCom
- Schema name for common tables: waterCom
- Schema name for SCA.SYSTEM ME: waterSYSME
- Schema name for SCA.APP ME: waterAPPME

- Schema name for Event ME: waterEventME
- Schema name for BPC ME: waterBPCME
- Schema name for BPC and HTM tables: waterBPC
- Schema name for ESBMessaging tables: waterESB
- User ID to create schemas: milk
- User ID to select, insert, update, and delete schemas:

Schema name	User ID to select, insert, update, and delete schemas
waterCom	waterCom
waterSYSME	waterSYSME
waterAPPME	waterAPPME
waterEventME	waterEventME
waterBPCME	waterBPCME
waterBPC	waterBPC
waterESB	waterESB

The following table contains information about how to set up the schema name and user ID privileges with DB2 as your database. If you choose a different database, see their documentation for setting up schema names and user ID privileges.

Table 58. Scenario 3: Multiple user ID or schema

Database tables	Database name with DB2	Schema name	User ID to create tables	User ID to select, insert, update, and delete rows
Common database tables	You supply this value in the • Installation wizard • Profile Management Tool • Silent install • Silent profile creation	This schema name is the same as the user ID that is used to select, insert, update, and delete rows.	This value is the same as the user ID that is used to select, insert, update, and delete rows.	You supply the user ID during profile creation through one of the following: • Installation wizard • Profile Management Tool • Silent install • Silent profile creation

Business Process Choreographer tables	You supply this value twice:
	1. In table creation scripts
	2. While configuring a deployment target using one of the following:
	  • Administrative console
	  • Installation wizard
	  • bpeconfig.jacl
		The table creation scripts need to be modified with a schema name that is used to select, insert, update, and delete rows.	This value is the same as the user ID that is used to select, insert, update, and delete rows.	You supply this value twice:
				1. In table creation scripts
				2. While configuring a deployment target using one of the following:
				  • Administrative console
				  • Installation wizard
				  • bpeconfig.jacl

Table 58. Scenario 3: Multiple user ID or schema (continued)

Database tables	Database name with DB2	Schema name	User ID to create tables	User ID to select, insert, update, and delete rows
Messaging tables	You supply this value with the definition of each messaging engine.	The table creation scripts must include the schema name that is used to select, insert, update, and delete rows.	This value is the same as the user ID that is used to select, insert, update, and delete rows.	You supply this value during the creation of the messaging engine. Select the **Create Table** option during the messaging engine configuration.

JDBC providers

You can use JDBC providers to interact applications with relational databases.

Applications use JDBC providers to interact with relational databases. The JDBC provider supplies the specific JDBC driver implementation class for access to a specific type of database. To create a pool of connections to that database, you associate a data source with the JDBC provider. Together, the JDBC provider and the data source objects are functionally equivalent to the Java EE Connector Architecture (JCA) connection factory, which provides connectivity with a non-relational database.

Refer to the examples of both Typical stand-alone environment setup and Typical deployment environment setup in the previous topic.

For more information on JDBC providers, see "JDBC providers" in the WebSphere Application Server information center.

Data sources for IBM Business Process Manager

Data sources provide a link between applications and relational databases. The data sources that you use are affected by whether you set up a stand-alone environment or a network deployment environment.

Applications use a data source to obtain connections to a relational database. A data source is analogous to the Java EE Connector Architecture (JCA) connection factory, which provides connectivity to other types of enterprise information systems (EIS).

A data source is associated with a Java Database Connectivity (JDBC) provider, which supplies the driver implementation classes that connect with a specific type of database. Application components interact directly with the data source to obtain connection instances to your database. The connection pool that corresponds to each data source provides connection management.

You can create multiple data sources with different settings, and associate them with the same JDBC provider. For example, you might use multiple data sources to access different databases within the same database application. In IBM Business Process Manager, JDBC providers must implement one or both of the following data source interfaces. Use these interfaces to run the application in a single-phase or two-phase transaction protocol.

Note: Business Process Choreographer data sources are created using the Business Process Choreographer configuration tools. Refer to Configuring Business Process Choreographer .

ConnectionPoolDataSource

A data source that supports application participation in local and global transactions, except two-phase commit transactions. When a connection pool data source is involved in a global transaction, the transaction manager does not provide transaction recovery. The application is responsible for providing the backup recovery process if multiple resource managers are involved.

XADataSource

A data source that supports application participation in any single-phase or two-phase transaction environment. When this data source is involved in a global transaction, the WebSphere Application Server transaction manager provides transaction recovery.

The following tables provide examples of typical stand-alone environment setups and typical deployment environment setups:

Table 59. Typical stand-alone environment setup

Datasource	Component	Scope	JNDI Name
WBI DataSource	CommonDB	Node	jdbc/WPSDB
SCA Application Bus ME data source	SCA ME	Server	jdbc/com.ibm.ws.sib/nlNode01.server1-SCA.APPLICATION.localhostNode01Cell.Bus
Business Process Choreographer data source	BPC	Server	jdbc/BPEDB
Business Process Choreographer ME data source	BPC ME	Server	jdbc/com.ibm.ws.sib/nlNode01.server1-BPC.localhostNode01Cell.Bus
event	CEI	Server	jdbc/cei
CEI ME data source	CEI ME	Server	jdbc/com.ibm.ws.sib/nlNode01.server1-CEI.*cellName*.BUS

Table 60. Typical deployment environment setup

Datasource	Component	Scope	JNDI Name
WBI DataSource	CommonDB	Cell	jdbc/WPSDB
SCA Application Bus ME data source	SCA ME	Cluster	jdbc/com.ibm.ws.sib/clusterone-SCA.APPLICATION.enduranceTestCell01.Bus
Business Process Choreographer data source	BPC	Cluster	jdbc/BPEDB
Business Process Choreographer ME data source	BPC ME	Cluster	jdbc/com.ibm.ws.sib/clusterone-BPC.enduranceTestCell01.Bus
event	CEI	Cluster	jdbc/cei
CEI ME data source	CEI ME	Cluster	jdbc/com.ibm.ws.sib/clusterone-CEI.*cellName*.BUS

Table and schema creation

Depending on your database provider, you need different database tables and schemas for your database in IBM Business Process Manager.

In the administrative console, when you select **Resources** > **JDBC** > **Business Integration Data Sources** and click a data source, you can select the check box for **Create Tables** to create the tables from the data source. If only a database administrator can create database tables, clear the check box, locate the scripts in the message box, and give these scripts to your database administrator to run. If you enable **Create Tables**, various deployment environment functions of each database provider are available, as shown in the following tables. An "X" indicates that the table or schema is created.

Tip: You configure the common database during profile creation.

Table 61. Table creation based on database provider

Database providers	Messaging Engine	Business Process Choreographer	Business Process Choreographer reporting	IBM Process Server	Performance Data Warehouse
DB2	X	X	X	X	X
Oracle	X	X	X	X	X
Microsoft SQL	X	X	X	X	X

Table 62. Schema creation based on database provider

Database providers	Messaging Engine	Business Process Choreographer	Business Process Choreographer Reporting	IBM Process Server	Performance Data Warehouse
DB2	X	X	X	X	
DB2 for z/OS	X	X	X	X	X
Oracle	X	X	X	X	

The only way to configure the Common Event Infrastructure database is manually. For more information, see *Configuring the Common Event Infrastructure database*.

Chapter 6. Installing and configuring IBM Business Process Manager Advanced

IBM Business Process Manager Advanced can be installed and configured on a single server (known as a stand-alone configuration), or you can distribute the components across multiple systems (known as a network deployment configuration).

Preparing to install and configure the software

Use the information listed in the following table to prepare for installing and configuring IBM Business Process Manager.

Before preparing to install and configure the software, you should have created a plan for the deployment environment that you want to create. For more information, see: Planning for IBM Business Process Manager

Table 63. Preparing for installation and configuration

Task	Where to find information	Result after completing the task
Review hardware and software requirements	Depending on your IBM BPM configuration, visit: • IBM Business Process Manager Advanced system requirements • IBM Business Process Manager Standard system requirements • IBM Business Process Manager Express system requirements	You understand the system requirements necessary to support yourIBM Business Process Manager installation.
Review the contents of the installation media	Depending on your IBM BPM configuration, see one of the following topics: • IBM Business Process Manager Advanced product package • IBM Business Process Manager Standard product package • IBM Business Process Manager Express product package	You are familiar with the contents on the installation media
Prepare your operating system	AIX Preparing AIX systems for installation Linux Preparing Linux systems for installation Solaris Preparing Solaris systems for installation Windows Preparing Windows systems for installation	You have prepared the operating system of each workstation to be used.

Table 63. Preparing for installation and configuration (continued)

Task	Where to find information	Result after completing the task
Make sure you have installed your database management system.	Consult your database documentation for information about installing and administering your database management system.	If not already the case, your database management system is installed. IBM Business Process Manager embeds the DB2 Express database. If you want to use DB2 Express as your database, you can select it as a feature from the installer and it is installed and configured automatically. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system. **Note:** If you already have a version of DB2 installed and you want to install DB2 Express, you must uninstall DB2 before running the IBM Business Process Manager installer. If the installer detects a version of DB2 installed and you have selected to install DB2 Express from the installer, you will receive a warning message and will not be able to install DB2 Express. **Important:** Linux If you are installing DB2 Express as a root user, you must ensure that all kernel requirements are met before the DB2 Express installation begins. See http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=/com.ibm.db2.luw.qb.server.doc/doc/c0057140.html for a list of the kernel requirements. You can locate the current values by parsing the output of the **ipcs -l** command.

Preparing operating systems for product installation

Before you can install IBM Business Process Manager Advanced, you must prepare your operating system. The configuration depends on the type of operating system you are using.

Before preparing the installation environment, complete the following tasks:

- Disable the firewall if you have a firewall running on the system where you plan to install IBM Business Process Manager Advanced.
- Ensure that your user login provides access to your DB2 or Oracle database commands.
- Complete additional tasks specific to your operating system.

Preparing AIX systems for installation

Before you can install IBM Business Process Manager, you must prepare your AIX operating system.

Because WebSphere Application Server is a prerequisite of IBM Business Process Manager, you must complete the required preparation steps in the Preparing the operating system for product installation topic in the WebSphere Application Server information center.

Note: However, please note the following points related to the WebSphere Application Server installation:

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5.1 uses IBM Installation Manager to install and does not use InstallShield Multiplatform (ISMP). Ignore any prerequisite instructions that refer specifically to running ISMP.
- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5.1 uses IBM Installation Manager to install fix packs and interim fixes and does not use the WebSphere Update Installer. Ignore any prerequisite instructions that refer specifically to running the WebSphere Update Installer.

Because certain steps are specific to a version of the operating system, all steps might not apply to your environment. If no qualifier is provided for a particular step, complete the step for all versions of the operating system.

Refer to the following technote for additional preparation information for configuring Installation manager to run on 64-bit AIX systems: https://www-304.ibm.com/support/docview.wss?uid=swg21330190&wv=1 .

Complete the following steps on your AIX system before installing IBM Business Process Manager:

1. If you are installing 32-bit WebSphere Application Server on a 64-bit operating system, ensure that the appropriate 32-bit libraries are installed on your 64-bit system.
2. If you are planning to install portlet-based dashboards, set the maximum number of open files using the following command before installing WebSphere Portal or portlet-based dashboards:

   ulimit -n 8800

   Alternatively, you can use the following steps to edit the resource limits file:

   a. Open /etc/security/limits.
   b. Edit or add the **default** section and include this line:

      nofiles = 8800

   c. Save and close the file.
   d. Log off from the operating system and log in again.
3. Set the **umask** value to 022 using the following command:

   umask 022
4. Ensure that you have Mozilla Firefox installed at version 3.5.x.x or higher.
5. Before starting the data movement service, increase the number of processes configured in the AIX operating system to avoid a connection reset error. You can increase the number of processing using a command, or using the AIX interface.
   - Run the command:

     `chgdev  -l sys0 -a maxuproc='256'`
   - In the AIX interface, enter **smitty**, then select **System Environments > Change / Show Characteristics of Operating System > Number of processes allowed per user(Num.)**.
6. Complete the steps to Tune AIX systems.

Preparing Linux systems for installation

Before you can install IBM Business Process Manager, you must prepare your Linux operating system.

Because WebSphere Application Server is a prerequisite of IBM Business Process Manager, you must complete all the required preparation steps in the Preparing the operating system for product installation topic in the WebSphere Application Server information center.

Note: However, please note the following points related to the WebSphere Application Server installation:
- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5.1 uses IBM Installation Manager to install and does not use InstallShield Multiplatform (ISMP). Ignore any prerequisite instructions that refer specifically to running ISMP.

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5.1 uses IBM Installation Manager to install fix packs and interim fixes and does not use the WebSphere Update Installer. Ignore any prerequisite instructions that refer specifically to running the WebSphere Update Installer.

Ensure that you have Mozilla Firefox installed at version 3.5.x.x or higher.

Because certain steps are specific to a version of the operating system, all steps might not apply to your environment. If no qualifier is provided for a particular step, complete the step for all versions of the operating system. To install Installation Manager on Red Hat Enterprise Linux 6.0 (64-bit), see Unable to install Installation Manager on RHEL 6.0 (64-bit).

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and you must also ensure that all kernel requirements are met before the DB2 Express installation begins. You can locate the current values by parsing the output of the **ipcs -l** command.

To change the values:
1. Add the following lines, in the below order, to the `/etc/sysctl.conf` file:
   ```
   kernel.shmmni=4096
   kernel.shmmax=4294967296
   kernel.shmall=8388608
   #kernel.sem=<SEMMS><SEMMNS><SEMOPM><SEMMNI>
   kernel.sem=250 256000 32 4096
   kernel.msgmni=16384
   kernel.msgmax=65536
   kernel.msgmnb=65536
   ```
2. Add the following lines to the end of `/etc/security/limits.conf`:
   ```
   # - stack - max stack size (KB)
   * soft stack 32768
   * hard stack 32768
   # - nofile - max number of open files
   * soft nofile 65536
   * hard nofile 65536
   # - nproc - max number of processes
   * soft nproc 16384
   * hard nproc 16384
   ```
3. Reboot your system.

Complete the following steps on your Linux system before installing IBM Business Process Manager:
1. If you are installing 32-bit WebSphere Application Server on a 64-bit operating system, ensure that the appropriate 32-bit libraries are installed on your 64-bit system.
2. If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6 as a root user, follow the previous instructions and skip this step. Otherwise, increase the maximum number of open files to at least 8800. The default setting is usually not enough. You can check your current maximum number of open files by using **ulimit -n** to see the maximum number of open files. The following example shows the maximum number of open files being increased to 8800. `Linux`
   a. Open `/etc/security/limits.conf`.
   b. Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:
      * hard nofile *8800*
      * soft nofile *8800*
   c. Save and close the file.
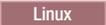
d. Log off and log in again.

For more information about this setting, run **man limits.conf** or see the Preparing the operating system for product installation topic in the WebSphere Application Server information center.

3. Install the following packages for your operating system:

Option	Description
Red Hat Enterprise Linux 5	compat-libstdc++-33-3.2.3-61 compat-db-4.2.52-5.1 libXp-1.0.0-8 rpm-build-4.4.2-37.el5 **64-bit kernel only:** compat-libstdc++-296-2.96-138
Red Hat Enterprise Linux 6	ksh-version.rpm Korn shell See the detailed instructions and list of packages in Unable to install Installation Manager on RHEL 6.0 (64-bit)
SUSE Linux Enterprise Server 9.0	XFree86-libs-32bit-9 glibc-32bit-9 glib-32bit-9 gtk-32bit-9

You can also install a later release of any of these packages if there are new packages as errata. If you have additional packages that are specific to your hardware, install them.

You can use single-line commands to install dependencies (all required packages). The following commands are examples using the default package managers on supported Linux distributions.

- **Red Hat Enterprise Linux 5 (32-bit):**

  ```
  yum install compat-libstdc++-33 compat-db libXp rpm-build  RHEL 5.x
  ```

- **Red Hat Enterprise Linux 5 (64-bit):**

  ```
  yum install compat-libstdc++-33 compat-db libXp rpm-build compat-libstdc++-296
  ```

- **SUSE Linux:**

  ```
  zypper install XFree86-libs-32bit-9 glibc-32bit-9 glib-32bit-9 gtk-32bit-9
  ```

4. Set the **umask** value to 022 using the following command:

   umask 022

5. On Red Hat Enterprise Linux 5 systems, disable SELinux, or set it to a permissive mode.

6. Restart the computer.

7. Complete the steps to Tune Linux systems.

Preparing Solaris systems for installation

Before you can install IBM Business Process Manager, you must prepare your Solaris operating system.

Because WebSphere Application Server is a prerequisite of IBM Business Process Manager, you must complete the required preparation steps in the Preparing the operating system for product installation topic in the WebSphere Application Server information center.

Note: However, please note the following points related to the WebSphere Application Server installation:

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5 uses IBM Installation Manager to install and does not use InstallShield Multiplatform (ISMP). Ignore any prerequisite instructions that refer specifically to running ISMP.

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5 uses IBM Installation Manager to install fix packs and interim fixes and does not use the WebSphere Update Installer. Ignore any prerequisite instructions that refer specifically to running the WebSphere Update Installer.

Because certain steps are specific to a version of the operating system, all steps might not apply to your environment. If no qualifier is provided for a particular step, complete the step for all versions of the operating system.

Refer to the following technote for additional preparation information for configuring Installation manager to run on Solaris systems: http://www-01.ibm.com/support/docview.wss?uid=swg24027719

Complete the following steps on your Solaris systems before installing IBM Business Process Manager:

1. If you are installing 32-bit WebSphere Application Server on a 64-bit operating system, ensure that the appropriate 32-bit libraries are installed on your 64-bit system.
2. If you are planning to install portlet-based dashboards, set the maximum number of open files using the following command before installing WebSphere Portal or portlet-based dashboards:

   ulimit -Hn 8800

   Alternatively, you can use the following steps to edit the resource limits file:

   a. Open /etc/system
   b. Add the following line to the end of the file:

      set rlim_fd_max=8800

   c. Save and close the file.
   d. Log off from the operating system and log in again.
3. Set the umask value to 022 using the following command:

   umask 022
4. Complete the steps to Tune Solaris systems.

Preparing Windows systems for installation

Before you can install IBM Business Process Manager, you must prepare your Windows operating system.

If you are planning to use DB2 Express with your IBM Business Process Manager installation, you must have administrative privileges (Administrator user) and must not have an existing DB2 database server on the system where you will perform the installation.

Because WebSphere Application Server is a prerequisite product for IBM Business Process Manager, you must complete all of the preparation tasks for WebSphere Application Server before installing IBM Business Process Manager.

Complete the following steps on your Windows system before installing IBM Business Process Manager:

1. Complete the below steps for the installation of WebSphere Application Server.
   a. Download and install a Web browser. You must install a Web browser if you want to use the launchpad application. If your system does not have a default browser or the browser has been corrupted or installed incorrectly, then you might experience errors when trying to open various hyperlinks in the installation wizard panels.
   b. If you are installing 32-bit WebSphere Application Server on a 64-bit operating system, ensure that the appropriate 32-bit libraries are installed on your 64-bit system.
   c. Stop all WebSphere Application Server-related Java processes on the machine where you are installing the product.
   d. Stop any Web server process such as the IBM HTTP Server.
   e. Stop all instances of the **process_spawner.exe** program. You can skip this step if the **process_spawner.exe** does not exist.The **process_spawner.exe** is a required binary for the

WebSphere Application Server to function properly. The **process_spawner.exe** is not intended to be called directly and is a core functionality of the WebSphere Application Server on Windows.

f. Provide adequate disk space. The amount of disk space required varies with the number of features or products installed. If you are installing the product using the installation wizard, the installation summary panel indicates the approximate amount of disk space required based on the features and products you have selected.If you plan to migrate applications and the configuration from a previous version, verify that the application objects have enough disk space. As a rough guideline, plan for space equal to 110 percent of the size of the applications.

g. Verify that prerequisites and corequisites are at the required release levels. Although the installation wizard checks for prerequisite operating system patches, review the prerequisites on the Supported hardware and software website if you have not done so already. Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

The WebSphere Application Server installation uses an IBM Installation Manager wizard. You can use the graphical interface of the wizard. You can also use the wizard in silent mode. If you are installing remotely and want to use the installation wizard, then you must use a connection mechanism that supports the use of graphics. If your connection does not support the use of graphics, then install the product silently.

To run the install successfully, you must have write permissions to the **USER_HOME** directory. If you do not have permission to write to **USER_HOME**, then be aware of the following install limitations:

- The Profile Management Tool GUI will not function due to a requirement to write to **USER_HOME**. You must use the **manageprofiles** on the command-line to manage profiles instead.

2. Complete the steps to Tune Windows systems.

Databases and installation and configuration scenarios

How databases are configured to work with the software is related to the software you are installing and the scenario you are trying to achieve.

In installation scenarios where you will be using the **Typical** installation option, you must pre-create your database, whether that database resides locally (on the same system on which you are installing IBM Business Process Manager or remotely (on a separate system). The only scenario where you are not required to pre-create your database, is if you are installing the DB2 Express database that is embedded with IBM Business Process Manager. DB2 Express is embedded with IBM Business Process Manager on Windows and on Linux for Intel. So, if you do not already have DB2 Express installed, it is optionally installed when you run the IBM Business Process Manager installer, and the installer also creates the common and component-specific databases on DB2 Express. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system.

Any scenario where you are not using DB2 Express for your **Typical** install is considered to be a **Typical** install with an *existing database*, meaning you already have a database installed and you will use the *Existing database panel* of the installer to specify its configuration properties. See Configuring an existing database during a typical installation for details. To use this option, you must ensure that your database has already been created.

You and your database administrator should review the information on configuring databases in the information center prior to installing and configuring the software.

Installing IBM Business Process Manager

Installing IBM Business Process Manager involves acquiring the software and then installing the software files: prerequisite software, the database product to be used by IBM Business Process Manager, and the IBM Business Process Manager software.

IBM Business Process Manager Advanced product package

Learn how to acquire IBM Business Process Manager and what software is supplied in its media packs and downloadable electronic installation images.

How to acquire IBM Business Process Manager

You can obtain the product code in any of the following ways:
- From the product media packs, which include CD-ROM and DVD media.
- From the Passport Advantage® site, where licensed customers can download installation images. For more information about the images available for download, see the Passport Advantage download document for Advanced and Passport Advantage download document for Advanced Process Server.

To buy the software, contact your IBM representative or IBM reseller, or visit the IBM Business Process Manager home page at http://www.ibm.com/software/integration/wps and select the *How to buy* link in the left column.

Software supplied with IBM Business Process Manager

Each media pack includes software that you need to install IBM Business Process Manager, to set up your IBM Business Process Manager environment, and to assemble and deploy applications. Also included in each media pack are optional supplemental software programs that provide value and tool support for your production and development environments.

Table 64 lists the software that is provided with the IBM Business Process Manager product. Not every software program is supplied on every platform.

Table 64. Software supplied with IBM Business Process Manager

Software	Description
IBM Business Process Manager	IBM Business Process Manager is a comprehensive BPM platform giving you visibility and insight to manage business processes. It scales smoothly and easily from an initial project to a full enterprise-wide program. IBM Business Process Manager harnesses complexity in a simple environment to break down silos and better meet customer needs.
WebSphere Application Server Network Deployment	The industry's premier Java-based application platform, integrating enterprise data and transactions for the dynamic e-business world. The Network Deployment version, upon which IBM Business Process Manager is built, delivers a rich application deployment environment with application services that provide enhanced capabilities for transaction management, as well as the security, performance, availability, connectivity, and scalability expected from the WebSphere family of products. This configuration also enables clustering, edge-of-network services, Web services enhancements, and high availability for distributed configurations. For more information about WebSphere Application Server Network Deployment, see theWebSphere Application Server Network Deployment information center.
Feature Pack for XML	Provides the XML programming model standards. Delivers new functions and support for industry standards.
Feature Pack for Service Component Architecture (SCA)	Defines a service-based model for building business process applications using an SOA approach.
DB2 Express	The embedded DB2 Express database.

Table 64. Software supplied with IBM Business Process Manager (continued)

Software	Description
IBM HTTP Server	The foundation of any e-business application is the Web server. IBM HTTP Server features include: • Easy installation • Support for SSL secure connections • Fast Response Cache Accelerator • IBM support as part of the WebSphere bundle • Hardware crypto support • Administration Server that helps to administer and configure IHS servers • Help information that uses the easy-to-navigate design that is common to all WebSphere products
Web server plug-ins	IBM Business Process Manager supplies a unique binary plug-in module and an associated plug-in configuration file for each supported Web server. The Plug-ins Installation wizard installs required files and configures the Web server and the underlying application server of IBM Business Process Manager to allow communication between the servers.
WebSphere Application Server Application Clients	An application client module is a Java Archive (JAR) file that contains a client for accessing a Java application. Running Java EE and Thin application clients that communicate with the underlying WebSphere Application Server product requires that elements of the Application Server are installed on the unit on which the client runs. However, if the system does not have the Application Server installed, you can install Application Clients, which provide a stand-alone client runtime environment for your client applications.
IBM Business Process Manager Help System built on Eclipse	The IBM Business Process Manager Help System is an Eclipse- and browser-based help system packaged for installation with IBM Business Process Manager. IBM Business Process Manager documentation is packaged for download as Eclipse document plug-ins, and can be viewed using this help system. Both the help system and document plug-in format are based on an open source approach developed by the Eclipse Project.
WebSphere Application Server Edge Components	WebSphere Application Server Edge Components address the needs of highly available, high-volume environments. The Edge Components include sophisticated load balancing, caching, and centralized security capabilities. See the WebSphere Application Server Edge Components Web page for more information.
DB2 Restricted Enterprise Edition	DB2 Restricted Enterprise Edition includes portions of DB2 Enterprise Server Edition (DB2 Enterprise 9). DB2 Enterprise 9 is designed to meet the data server needs of mid- to large-size businesses. It can be deployed on Linux, UNIX, or Windows servers of any size, from one processor to hundreds of processors. DB2 Enterprise 9 is an ideal foundation for building on demand enterprise-wide solutions. A broad array of autonomic or self-managing capabilities can free more administrator time to focus on driving business value. The ease of use in DB2 and the self-managing characteristics might even eliminate the need for dedicated administrators in smaller implementations. DB2 provides the following clients: • DB2 Runtime Client. This client is best suited for enabling applications to access DB2 servers. • DB2 Client. This client includes all the functionality found in the DB2 Runtime Client plus functionality for client-server configuration, database administration, and application development.

Table 64. Software supplied with IBM Business Process Manager (continued)

Software	Description
IBM Tivoli® Directory Server	The IBM Tivoli Directory Server product is a powerful Lightweight Directory Access Protocol (LDAP) infrastructure. Tivoli Directory Server provides a foundation for deploying comprehensive identity management applications and advanced software architectures. See IBM Tivoli Directory Server for more information.
IBM Tivoli Access Manager	IBM Tivoli Access Manager integrates with e-business applications right out of the box, to deliver a secure, unified, and personalized e-business experience. By providing authentication and authorization APIs and integration, Tivoli Access Manager helps you secure access to business-critical applications and data that might be spread across the extended enterprise. See IBM Tivoli Access Manager for e-business for more information.
IBM Support Assistant	The IBM Support Assistant (ISA) is a tool that helps you use various IBM Support resources. The IBM Support Assistant offers four components to help you with software questions: • A Search component, which helps you access pertinent support information in multiple locations. • A Support Links component, which provides a convenient location to access various IBM Web resources such as IBM product sites, IBM support sites, and links to IBM news groups. • An Education component, which provides guided access to IBM product education Web sites, including IBM Education Assistant modules. • A Service component, which helps you submit an enhanced problem report that includes key system data to IBM. Using the IBM Support Assistant with IBM Business Process Manager requires installing IBM Support Assistant, version 4.0.2, and then installing plug-ins for IBM Business Process Manager.
IBM DMZ Secure Proxy Server for IBM WebSphere Application Server	IBM DMZ Secure Proxy Server for IBM WebSphere Application Server provides a secure platform for your proxy server. It allows you to install your proxy server in the demilitarized zone (DMZ), while reducing the security risk that might occur if you choose to install an application server in the DMZ to host a proxy server.
IBM IBM Rational® Application Developer Assembly and Deployment Features for WebSphere Software V7.5	IBM IBM Rational Application Developer Assembly and Deployment Features for WebSphere Software V7.5 supports the assembly and deployment of applications by providing fully integrated tools to assemble, test, debug, and deploy Java EE applications.
IBM Rational Agent Controller V8.0	IBM Rational Agent Controller is a daemon that allows client applications to launch and manage local or remote applications and provides information about running applications to other applications.

Media packs supplied with IBM Business Process Manager

Seven media packs are available for IBM Business Process Manager. Each media pack contains the product media applicable to a specific operating environment.

Note: Each media pack contains an IBM Business Process Manager V7.5 Quick Start CD. This CD-ROM contains the IBM Business Process Manager Quick Start Guide in all available translations.

See the following sections for detailed contents per platform:

AIX media pack

The IBM Business Process Manager for AIX media pack contains IBM Business Process Manager content for both 32-bit and 64-bit platforms. Table 65 shows the content for 32-bit and 64-bit platforms.

Table 65. Contents of AIX media pack for 32-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for AIX	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the `WBI` directory • (64-bit only) IBM IBM Process Server Help System in the `IEHS` directory • WebSphere Application Server Network Deployment (V7.0) • Feature Pack for XML • Feature Pack for SCA Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for AIX on PowerPC® 32-bit	Two CD-ROMs contain the following installable components: • (32-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment V7.0 Supplements for AIX on PowerPC 64-bit	Two CD-ROMs contain the following installable components: • (64-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool
WorldType Fonts for Multiplatform, Multilingual for WebSphere Application Server Network Deployment V7.0	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for AIX 32-bit	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for AIX 64-bit	One CD-ROM
IBM Edge Components and IBM Edge Components for IPv6 V7.0 for AIX	One DVD
IBM IBM Rational Application Developer Assembly and Deployment Features for WebSphere Software V7.5	Six CD-ROMs
IBM Tivoli Access Manager for e-business V6.1 for AIX	One CD-ROM

Table 65. Contents of AIX media pack for 32-bit and 64-bit platforms (continued)

Media label	How supplied
IBM Tivoli Directory Server V6.3 AIX 64-bit	One DVD
IBM DB2 Restricted Enterprise Server Edition V9.7 - Authorized User Option - Activation CD	One CD-ROM
IBM DB2 Enterprise Server Edition V9.7 for AIX	One DVD
IBM IBM Rational Application Developer Assembly and Deployment Features for WebSphere Software V7.5	Six CD-ROMs
IBM WebSphere Installation Factory V7.0 for AIX on PowerPC	One CD-ROM
IBM Support Assistant V4.0.2 (WorkBench) for Linux	One CD-ROM
IBM Support Assistant V4.0.2 (WorkBench) for Windows	One CD-ROM
IBM Support Assistant V4.0.2 (Agent) for AIX on x86 32-bit	One CD-ROM

Linux x86 media pack

The IBM Business Process Manager for Linux x86 media pack contains IBM Business Process Manager content for both 32-bit and 64-bit platforms. Table 66 shows the content for both 32-bit and 64-bit platforms.

Table 66. Contents of Linux x86 media pack for 32-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for Linux x86	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the `WBI` directory • (32-bit only) IBM IBM Process Server Help System in the `IEHS` directory • WebSphere Application Server Network Deployment (V7.0) • DB2 Express • Feature Pack for XML • Feature Pack for SCA Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for Linux x86 Intel 32-bit	Two CD-ROMs contain the following installable components: • (32-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool

Table 66. Contents of Linux x86 media pack for 32-bit and 64-bit platforms (continued)

Media label	How supplied
WebSphere Application Server Network Deployment V7.0 Supplements for Linux x86 AMD 64-bit	Two CD-ROMs contain the following installable components: • (64-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment Rational Agent Controller V8.0 32-bit	One CD-ROM
WorldType Fonts for Multiplatform, Multilingual for WebSphere Application Server Network Deployment V7.0 32-bit	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for Linux x86 32-bit	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for Linux x86 64-bit	One CD-ROM
IBM IBM Rational Application Developer Assembly and Deployment Features for WebSphere Software V7.5	Six CD-ROMs
IBM Edge Components and IBM Edge Components for IPv6 V7.0 for Linux	One DVD
IBM DB2 Enterprise Server Edition V9.7 for Linux on AMD64 and Intel EM64T systems 64-bit	One DVD
IBM Tivoli Access Manager for e-business V6.1 for Linux	One CD-ROM
IBM DB2 Restricted Enterprise Server Edition V9.7 - Authorized User Option - Activation CD 32-bit	One CD-ROM
IBM WebSphere Installation Factory V7.0 for Linux on x86	One CD-ROM
IBM Support Assistant V4.0.2 (WorkBench) for Linux	One CD-ROM
IBM Support Assistant V4.0.2 (WorkBench) for Windows	One CD-ROM
IBM Support Assistant V4.0.2 (Agent) for Linux on x86 32-bit	One CD-ROM

Linux on System z® media pack

The IBM Business Process Manager for Linux on System z media pack contains IBM Business Process Manager content for both 31-bit and 64-bit platforms. Table 67 on page 150 shows the content for both 31-bit and 64-bit platforms.

Table 67. Contents of Linux on System z media pack for 31-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for Linux on System z	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the WBI directory • WebSphere Application Server Network Deployment (V7.0) • Feature Pack for XML • Feature Pack for SCA Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for Linux on System z 31-bit	Two CD-ROMs contain the following installable components: • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment V7.0 Supplements for Linux on System z 64-bit	Two CD-ROMs contain the following installable components: • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool
WorldType Fonts for Multiplatform, Multilingual for WebSphere Application Server Network Deployment V7.0 31-bit	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for Linux on System z 31-bit	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for Linux on System z 64-bit	One CD-ROM
IBM Edge Components and IBM Edge Components for IPv6 V7.0 for Linux on System z	One DVD
IBM IBM Rational Application Developer Assembly and Deployment Features for WebSphere Software V7.5 31-bit	Six CD-ROMs
IBM Tivoli Access Manager for e-business V6.1 for Linux PowerPC on System z	One CD-ROM
IBM Tivoli Directory Server V6.3 Linux on System z 64-bit	One DVD
IBM DB2 Restricted Enterprise Server Edition V9.7 - Authorized User Option - Activation CD	One CD-ROM
IBM DB2 Enterprise Server Edition V9.7 for Linux on System z	One DVD
IBM WebSphere Installation Factory V7.0 for Linux on System z	One CD-ROM
IBM Support Assistant V4.0.2 (WorkBench) for Linux	One CD-ROM

Media label	How supplied
IBM Support Assistant V4.0.2 (WorkBench) for Windows	One CD-ROM

Solaris media pack

The IBM Business Process Manager for Solaris media pack contains IBM Business Process Manager content for SPARC 32-bit and 64-bit platforms. Table 68 shows the content for both SPARC 32-bit and 64-bit platforms.

Table 68. Contents of Solaris media pack for SPARC 32-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for Solaris on SPARC	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the `WBI` directory • WebSphere Application Server Network Deployment (V7.0) • Feature Pack for XML • Feature Pack for SCA Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for Solaris SPARC	Two CD-ROMs contain the following installable components: • (32-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool
WorldType Fonts for Multiplatform, Multilingual for WebSphere Application Server Network Deployment V7.0	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for Solaris SPARC 32-bit	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for Solaris SPARC 64-bit	One CD-ROM
IBM Edge Components and IBM Edge Components for IPv6 V7.0 for Solaris on SPARC	One DVD
IBM Tivoli Access Manager for e-business V6.1 for Solaris SPARC	One CD-ROM
IBM DB2 Restricted Enterprise Server Edition V9.7 - Authorized User Option - Activation CD	One CD-ROM
IBM DB2 Enterprise Server Edition V9.7 for Solaris on UltraSPARC systems	One DVD
IBM Rational Application Developer Assembly and Deployment Features for WebSphere Software V7.5 32-bit	Six CD-ROMs
IBM WebSphere Installation Factory V7.0 Solaris on SPARC	One CD-ROM

Table 68. Contents of Solaris media pack for SPARC 32-bit and 64-bit platforms (continued)

Media label	How supplied
IBM Support Assistant V4.0.2 (WorkBench) for Linux 32-bit	One CD-ROM
IBM Support Assistant V4.0.2 (WorkBench) for Windows	One CD-ROM
IBM Support Assistant V4.0.2 (Agent) for Solaris on SPARC	One CD-ROM

Windows media pack

The IBM Business Process Manager for Windows media pack contains IBM Business Process Manager content for both 32-bit and 64-bit platforms. Table 69 shows the content for both 32-bit and 64-bit platforms.

Table 69. Contents of Windows media pack for 32-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for Windows	• IBM Business Process Manager in the `WBI` directory • (32-bit only) IBM Process Server Help System in the `IEHS` directory • WebSphere Application Server Network Deployment (V7.0) • DB2 Express • Feature Pack for XML • Feature Pack for SCA Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for Windows on Intel 32-bit	Two CD-ROMs contain the following installable components: • Application Client for WebSphere Application Server • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment V7.0 Supplements for Windows AMD 64-bit	One CD-ROM contains the following installable components: • IBM HTTP Server • IBM Support Assistant • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment Rational Agent Controller V8.0 32-bit	One CD-ROM
WorldType Fonts for Multiplatform, Multilingual for WebSphere Application Server Network Deployment V7.0	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for Windows 32-bit	One CD-ROM
IBM DMZ Secure Proxy Server V7.0 for Windows 64-bit	One CD-ROM

Table 69. Contents of Windows media pack for 32-bit and 64-bit platforms (continued)

Media label	How supplied
IBM Edge Components and IBM Edge Components for IPv6 V7.0 for Windows	One CD-ROM
IBM Tivoli Access Manager for e-business V6.1 for Windows	One CD-ROM
IBM Tivoli Directory Server V6.3 for Windows	One DVD
IBM DB2 Restricted Enterprise Server Edition V9.7 - Authorized User Option - Activation CD	One CD-ROM
IBM DB2 Enterprise Server Edition V9.7 for Windows on AMD and Intel systems (x86) 32-bit	One DVD
IBM DB2 Enterprise Server Edition V9.7 for Windows on AMD64 and Intel EM64T systems 64-bit	One DVD
IBM IBM Rational Application Developer Assembly and Deployment Features for WebSphere Software V7.5	Six CD-ROMs
IBM WebSphere Installation Factory V7.0 Windows on x86	One CD-ROM
IBM Support Assistant V4.0.2 (WorkBench) for Linux	One CD-ROM
IBM Support Assistant V4.0.2 (WorkBench) for Windows	One CD-ROM
IBM Support Assistant V4.0.2 (Agent) for Windows on x86 32-bit	One CD-ROM

IBM Message Service Client for C/C++ and IBM Message Service Client for .NET are no longer part of the media packs. The latest versions of these products can be downloaded from the IBM Support and Download Web site at IA94: IBM Message Service Client for C/C++ and IA9H: IBM Message Service Client for .NET.

Limited use of IBM Tivoli Federated Identity Manager by WebSphere customers can be accessed at Tivoli Federated Identity Manager for WebSphere Application Server Network Deployment.

Installing IBM Business Process Manager Advanced

You install the software interactively from the launchpad program or silently by running Installation Manager in silent installation mode. In silent mode, the installation wizard does not display a graphical interface, but reads your responses from a response file.

Roadmap: Installing and configuring IBM Business Process Manager Advanced

The IBM Business Process Manager installer and configuration programs accommodate a variety of scenarios. This roadmap lists the sequence of tasks for installing and configuring the software for a stand-alone or network deployment scenario.

In general, installing the software means adding the product binaries from media or from a download site on to your system. In some instances, installing the software also configures the software for use.

Use the information in the roadmap as a supplement to the GUI and to build your understanding of the installation and configuration procedures for a particular scenario, from its high-level tasks to the associated procedural information.

The sections in the roadmap target specific installation and configuration scenarios. These scenarios represent ways to achieve either a stand-alone or network deployment environment. Each section includes a table listing the activities to perform, with links to the instructions and notes about the result of completing each activity.

The following scenarios are covered in the roadmap:

*   Typical installation.

    The **Typical installation** scenario installs the software and configures a stand-alone profile. A Typical installation does not require you to create profiles separately using the Profile Management Tool or `manageprofiles` utility.

    The Typical installation option is the simplest and quickest method for installing and configuring the software.

    This scenario is ideal for getting full Business Process Manager features and functionality (for Express, Standard, or Advanced configurations) on to a single machine. See Installing IBM BPM Advanced using the **Typical** option for details.

*   Custom installation, followed by profile creation of one or more stand-alone profiles.

    The **Custom installation** scenario also installs the software on to your system, but it provides you with more control over the features and functions that are installed. For a stand-alone server environment, create the stand-alone profiles after the installing the product binaries by using either the Profile Management Tool or `manageprofiles` command-line utility.

    See Installing IBM BPM Advanced using the **Custom installation** and configuring one or more stand-alone profiles.

*   Custom installation, followed by profile creation of one or more deployment manager and custom (managed node) profiles.

    This installation and configuration scenario provides the capacity, scalability, and robustness that is generally required of a large-scale production environment. The type of configuration created using this scenario is known as a *network deployment configuration*, which is made up of a group of servers (known as clusters) that collaborate to provide workload balancing and failover. The servers are managed centrally, using a single administrative console known as the deployment manager.

    You can achieve a *standardized* network deployment configuration (based on topology pattern templates packaged with the software) or a *customized* network deployment configuration (one you create yourself, without the aid of templates).

    –   A standardized network deployment configuration:

        The installer installs the software on to your system, and then you use the profile configuration programs (Profile Management Tool or `manageprofiles` command-line utility) to create and configure one or more deployment manager and custom (managed node) profiles and the Deployment Environment wizard to create a network deployment configuration based on topology pattern templates packaged with the software. See Installing IBM BPM Advanced using the **Custom installation** and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment

    –   A customized network deployment configuration:

        The installer installs the software on to your system, and then you use the profile configuration programs (Profile Management Tool or `manageprofiles` command-line utility) to create and configure one or more deployment manager and custom (managed node) profiles and the administrative console to create a customized network deployment configuration. See Installing IBM BPM Advanced using the **Custom installation** and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment

    The following diagram illustrates the tasks of the installation and configuration scenarios.

```
                        ┌─────────────┐
                        │    Start    │
                        └──────┬──────┘
                               │
                        Decision Point
                               │
                        ┌──────▼──────────┐
                        │ Install the software │
                        └──────┬──────────┘
                               │
                        Decision Point
                               │
              ┌────────────────┴────────────────┐
       ┌──────▼──────────┐              ┌──────▼──────────┐
       │ Install interactively │         │  Install silently  │
       └──────┬──────────┘              └─────────────────┘
              │
       Decision Point
              │
  ┌───────────────┬───────────────┬───────────────┐
┌─▼─────────────┐ ┌─▼────────────┐ ┌─▼────────────┐ ┌─▼────────────┐
│ Typical installation │ │ Custom installation │ │ Custom installation │ │ Custom installation │
│                    │ │ stand-alone       │ │ standardized ND   │ │ customized ND     │
└────────────────────┘ └─────────────────┘ └──────┬──────────┘ └─────────────────┘
                                                   │
                                            Decision Point
                                                   │
                                    ┌──────────────┴──────────────┐
                              ┌─────▼────────┐            ┌─────▼──────────┐
                              │  Use wsadmin  │            │ Use Deployment  │
                              │   commands    │            │ Environment wizard │
                              └───────────────┘            └─────────────────┘
```

For conceptual information about network deployment, see "Choosing a stand-alone or network deployment environment" on page 21 and Planning your deployment environment.

For information about topology patterns packaged with the software and supported by the Deployment Environment wizard, see Overview: Deployment environment topologies and patterns.

Installing IBM BPM Advanced using the Typical option

You can use the Typical installation option in the installer to install the software and configure a stand-alone profile automatically. In a Typical installation there is no need to run the Profile Management Tool or run `manageprofiles` after the installation.

This installation option will default the majority of settings but does allow you to specify the installation path and database type.

The Typical option is the quickest way to install and configure the software.

For a Typical installation, you install Process Center and Process Server separately. So, you will run the Typical installation for a Process Center to completion and then run the Typical installation for Process Server to completion.

For information about installing IBM BPM Advanced using the **Typical** option, see Typical installation: IBM Business Process Manager Advanced.

Installing IBM BPM Advanced using the Custom installation and configuring one or more stand-alone profiles

You can use the Custom installation option in the installer to install the software and configure one or more stand-alone profiles using Profile Management Tool or `manageprofiles` command-line utility.

Table 70. Installing IBM BPM Advanced using the Custom installation option and configuring one or more stand-alone profiles

Task	Where to find information	Result after completing the task
Install the software using the Custom installation option.	For information about installing *IBM BPM Advanced* using the Custom installation option, see Custom installation: IBM Business Process Manager Advanced	The custom installation for *IBM BPM Advanced* installs the product binaries for Process Center, Process Designer, and Process Server on to your system. The custom installation for *IBM BPM Advanced* does not create profiles during the install.
Launch the Profile Management Tool.	If you did not launch the Profile Management Tool from the installer, you can do so now. See Starting the Profile Management Tool **Restriction:** You cannot use the Profile Management Tool to create profiles on BPM installations on 64-bit architectures except on the Linux on zSeries platform. Instead, proceed to the next step and use the `manageprofiles` command-line utility.	The Profile Management Tool is started and ready to use. Because data from the Process Center profile is used as input to the Process Server profile creation process, you should create your Process Center stand-alone profile first (before creating the Process Server stand-alone profile).
Create one or more Process Center stand-alone profiles.	Depending on how you want to create your Process Center stand-alone profiles, see one of the following topics: • Creating a Process Center stand-alone profile using the Profile Management Tool • Creating a Process Center stand-alone profile using the manageprofiles utility	You have created a Process Center stand-alone profile. This profile defines your stand-alone server environment and it contains command files, configuration files, and log files. The profile creation process configures the database (common and component-specific) and generates the database tables required to support your stand-alone server environment. You can now create your Process Server stand-alone profiles, or you can install the Process Designer. The decision about which task to do next depends on your planned usage. • If you want to begin using the business process designing capabilities of the software, then you would download and install the Process Designer component. • If your objective is to fully configure the software, including the runtime environment, then you would create the Process Server stand-alone profiles next.

Task	Where to find information	Result after completing the task
Install the Process Designer.	See Installing the Process Designer	You have installed the Process Designer. For information about how to use Process Designer, see the following topics: • Hiring Sample Tutorial for IBM Process Designer • Authoring environments • Process development with the Process Center To continue configuring your system, see Create one or more Process Server stand-alone profiles
Create one or more Process Server stand-alone profiles.	Depending on how you want to create your Process Server stand-alone profiles, see one of the following topics: • Creating a Process Server stand-alone profile using the Profile Management Tool • Creating a Process Server stand-alone profile using the manageprofiles utility	The stand-alone server environment is now configured and ready to use.

Installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment

You can use the Custom installation option in the installer to install the software and use the Profile Management Tool or **manageprofiles** command-line utility to configure one or more deployment manager and custom (managed node) profiles. After profile creation you can use the Deployment Environment wizard to generate a *standardized network deployment environment*.

The software includes several templates of *topology patterns*. These topology patterns provide the construct for standardized network deployment environments. You implement these patterns by using the Deployment Environment wizard.

The decision on which pattern to select from the Deployment Environment wizard depends on the planned usage of your environment (proof of concept, testing, or production) and the processing capabilities (such as high-availability and failover processing) required by your enterprise.

The installation and configuration scenario described in this section assumes your business needs and requirements can be met by one of the standardized topology patterns included with the software. If you have a scenario that cannot be addressed by the patterns included with the software, you can create a customized network deployment environment using the administrative console. See "Installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment" on page 9.

Table 71. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND

Task	Where to find information	Result after completing the task
Install the software using the Custom installation option.	For information about installing IBM BPM Advanced using the Custom installation option, see Custom installation: IBM Business Process Manager Advanced	The custom installation for *IBM BPM Advanced* installs the product binaries for Process Center (which includes Process Server functionality), Process Designer, and WebSphere ESB on to your system. You are now ready to create the database configuration for your network deployment environment.
Design the database configuration that applies to the environment you are creating.	For information about designing the database configuration for IBM BPM Advanced see Creating a database design file for a stand-alone profile or deployment environment using the database design tool and follow the instructions for designing a network deployment database configuration. Generate the design document and run the SQL scripts for Process Center.	The database configuration, including all of the required database tables generated by the SQL scripts exist on your system. You will reference the design document from the Profile Management Tool or **manageprofiles** utility. You can now begin the profile creation process. For a network deployment environment configuration, use the Profile Management Tool or **manageprofiles** to create the deployment manager profiles and one or more custom (managed node) profiles for the IBM BPM components you will use.
Launch the Profile Management Tool.	If you did not launch the Profile Management Tool from the installer, you can do so now. See Starting the Profile Management Tool **Restriction:** You cannot use the Profile Management Tool to create profiles on BPM installations on 64-bit architectures except on the Linux on zSeries platform. Instead, proceed to the next step and use the **manageprofiles** command-line utility.	The Profile Management Tool is ready to use.

Table 71. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task
Create a Process Center deployment manager profile.	This task assumes that you select parameters in the Profile Management Tool or **manageprofiles** command-line **to point to the database design document** created when you completed the task *Design the database configuration that applies to the environment you are creating*. **Note:** If you have not already created a database design document and generated the SQL from the DDT, you can use the Profile Management Tool configure the database and run the associated SQL. Depending on how you want to create your Process Center profiles, see one of the following topics: • Creating Process Center deployment manager profiles using the Profile Management Tool • Creating Process Center deployment manager and custom profiles using manageprofiles	You have a Process Center deployment manager profile. This profile defines your environment and it contains command files, configuration files, and log files. A deployment manager is a server that manages operations for a logical group, or cell, of other servers. The deployment manager is the central location for administering the servers and clusters.
If you have not yet created the common database, do so now.	See Creating the Common database and tables after profile creation or augmentation	The common database has been created.
Start the Deployment Manager and verify that the start operation was successful.	For information about how to start the deployment manager, see Starting deployment managers	The deployment manager server is started.
Create the Process Center custom (managed node) profile or profiles.	This task assumes that you **are not federating nodes** as part of the profile creation process. It assumes that you will set parameters in the Profile Management Tool or **manageprofiles** command for *federating nodes later* (after creating the custom (managed node) profiles.) Depending on how you want to create your profiles, see one of the following topics: • Creating Process Center custom profiles (managed nodes) using the Profile Management Tool • Creating Process Center deployment manager and custom profiles using manageprofiles Repeat this task for each managed node.	You have your custom (managed node) profiles. These nodes are managed by and administered from the deployment manager. You can now federate the node into the Process Center deployment manager cell. The managed node contains a node agent and can contain managed servers. In a managed node, you can configure and run managed servers.
Federate the custom (managed) node to the deployment manager.	See Federating custom nodes to a deployment manager for instructions about how to use the **addNode** command to federate the Process Center custom node or nodes into the Process Center deployment manager cell.	The custom profile is federated into the deployment manager.

Table 71. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task
Using the Deployment Environment wizard, create a standardized network deployment environment.	For information about how to use the Deployment Environment wizard, see Creating the Process Center deployment environment using a pattern	As part of this task you need to address any deferred configuration items before generating the Process Center deployment environment. You have created your Process Center network deployment environment.
Create a cell for Process Server.	To run Process Server, you must create a separate cell. This involves the same sequence of steps, except you create a Process Server deployment manager and Process Server custom (managed nodes) and then use the Deployment Environment wizard to create the Process Server deployment environment, as described in the following topics: • Creating Process Server deployment manager profiles using the Profile Management Tool • Creating Process Server custom profiles (managed nodes) using the Profile Management Tool • Creating Process Server deployment manager and custom profiles using manageprofiles – Federating custom nodes to a deployment manager • Creating the Process Server deployment environment using a pattern As part of this task you need to address any deferred configuration items and then generate the Process Server deployment environment.	You have created your Process Server network deployment environment.
Perform manual database configuration steps.	You must complete additional database configuration steps before starting the clusters in your deployment environment. For information about these additional steps, see Completing the database configuration for your network deployment environment	You have completed the required manual database configuration activities for the network deployment environment.

Task	Where to find information	Result after completing the task
Load the database with system information.	See Loading the database with system information for information about how to run the bootstrap utility. **Windows** bootstrapProcessServerData.bat **Linux** **UNIX** bootstrapProcessServerData.sh You must run the bootstrap utility prior to the first startup of a cluster member.	You have loaded the database with system information prior to successfully starting the Process Server / Process Center.

Installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment

The topology patterns packaged with the software and implemented using the Deployment Environment wizard are intended to address a broad spectrum of business processing requirements. However, if you have scenario that the topology patterns do not address sufficiently, you can use the administrative console to create a customized network deployment environment. The table below lists the steps you would perform in such a scenario.

Note: This scenario is intended for users who have an advanced understanding of how to configure product components and functionality using the administrative console. Before you embark on the installation and configuration scenario described in this section, consider using the Deployment Environment wizard to create your network deployment environment.

Note: Command assistance is available for a subset of administrative console actions. When available, command assistance displays the wsadmin scripting command for the last console action you performed. You can then use this data to create wsadmin scripts that automate certain administrative tasks. For more information on command assistance, see Administrative console actions with command assistance.

Table 72. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND

Task	Where to find information	Result after completing the task
Install the software and configure the required profiles.	Complete the tasks listed in "Installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment" on page 5 up to the task *Using the Deployment Environment wizard, create the network deployment configuration*. Instead of using the Deployment Environment wizard, you will create a customized deployment environment manually using the administrative console.	You have created the deployment manager and custom managed nodes and have federated the nodes into the deployment manager cell. The custom installation for *IBM BPM Advanced* installs the product binaries for Process Center (which includes full Process Server functionality), Process Designer and WebSphere ESB on to your system. You can now use the administrative console to create servers, server clusters and the components that will comprise your network deployment environment.

Table 72. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND (continued)

Task	Where to find information	Result after completing the task
Create and configure servers and clusters using the administrative console.	See Creating and configuring servers and clusters using the administrative console.	You have created the servers and server clusters for your environment.
Configure a server or cluster as a Process Server.	For information about using the administrative console to configure your server or server cluster as a Process Server, see Configuring a server or cluster as a Process Server. You can also configure a server or cluster as a Process Server using wsadmin. See configureProcessServer command.	You have configured the servers or server clusters as Process Servers.
Configure the Performance Data Warehouse component on a server or cluster.	For information about using the administrative console to configure Performance Data Warehouse on a server or cluster, see Configuring the Performance Data Warehouse component on a server or cluster You can also configure Performance Data Warehouse on a server or cluster using wsadmin. See configurePerfDW command.	You have configured Performance Data Warehouse on the Process Server.
Configure SCA support for a server or cluster.	For information about using the administrative console to configure SCA support for a server or cluster, see Configuring SCA support for a server or cluster.	You have configured SCA support for the server or cluster.
Configure Business Space.	For information about using the administrative console to configure Business Space, see Configuring Business Space.	You have configured the Business Space component.
Configure Business Process Choreographer.	For information about using the administrative console to configure Business Process Choreographer, see Configuring Business Process Choreographer. If you decide to use scripting rather than the administrative console to configure Business Process Choreographer, see Using the bpeconfig.jacl script to configure Business Process Choreographer.	You have configured Business Process Choreographer.
Configure business rules and selectors.	For information about using the administrative console to configure business rules and selectors, see Configuring business rules and selectors.	You have configured Business Rules and Selectors.
Configure the relationship service.	For information about using the administrative console to configure the relationship service, see Configuring the relationship service.	You have configured the Relationship Service.

Table 72. Steps for installing IBM BPM Advanced using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND (continued)

Task	Where to find information	Result after completing the task
Set up the Messaging Service.	For information about using the administrative console to configure the Messaging Service, see *Setting up the messaging server environment*.	You have set up the messaging server environment.
Configure the JNDILookup web service.	For information about using the administrative console to configure the JNDILookup web service, see *Configuring the JNDILookup Web Service*.	You have configured the JNDILookup Web Service.
Configure extended messaging resources.	For information about using the administrative console to configure extended messaging resources, see Configuring extended messaging resources.	You have configured the extended messaging resources.
Configure Common Event Infrastructure.	For information about using the administrative console to configure the Common Event Infrastructure, see Configuring Common Event Infrastructure.	You have configured the Common Event Infrastructure.
Configuring IBM Business Process Manager widgets for WebSphere Portal.	For information about using the administrative console to configure widgets for WebSphere Portal, see Configuring IBM Business Process Manager widgets for WebSphere Portal	You have configured widgets for WebSphere Portal.
Configure WebSphere Business Integration Adapters.	For information about using the administrative console to configure the WebSphere Business Integration Adapters, see Configuring WebSphere Business Integration Adapters.	You have configured the WebSphere Business Integration Adapters.
Configure IBM Business Process Manager for Service Federation Management.	For information about using the administrative console to configure IBM Business Process Manager for Service Federation Management, see Configuring IBM Business Process Manager for Service Federation Management.	You have configured IBM Business Process Manager for Service Federation Management.
Load the database with system information.	See Loading the database with system information for information about how to run the bootstrap utility. Windows bootstrapProcessServerData.bat Linux UNIX bootstrapProcessServerData.sh You must run the bootstrap utility prior to the first startup of a cluster member.	You have loaded the database with system information prior to successfully starting the Process Server / Process Center.

Typical installation: IBM Business Process Manager Advanced

Use the Typical installation option to install IBM Business Process Manager Advanced in environments for development, quality assurance, and non-clustered staging and production. This installation option sets most settings by default, but allows you to specify the installation path and database type. You must perform a Typical installation from an electronic installation image (not a DVD).

Understand the usage scenarios for a Typical installation to make sure that the installation environment that is created by this option will meet your needs. Typically, you should select the Typical option to maintain a personal copy of IBM Business Process Manager on your system. In this way, you can develop integration services or business processes locally, or you can contribute artifacts via the export and import functions in the product. A Typical install is also recommended for proof of concept work and for learning about the features and functions of the product.

Tip: To use an existing database server rather than the embedded DB2 Express database, prepare the configuration information for DB2, Microsoft SQL Server, or Oracle before you begin this procedure. To use this option, you must ensure that your databases have already been created. For DB2, the databases must be created with at least a 32K page size.

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and you must also ensure that all kernel requirements are met before the DB2 Express installation begins. You can locate the current values by parsing the output of the **ipcs -l** command.

Important: For typical installations, the product's bit architecture must match the system's bit architecture. If you are on a 32 bit system, a 32 bit version of the product will be installed. If you are on a 64 bit system, a 64 bit version of the product will be installed. If you need to install a 32 bit product on a 64 bit system, you must use the Custom installation option.

`Windows` To install or run IBM Business Process Manager Advanced on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

Important: Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager Advanced.

This task describes the procedure for installing IBM Business Process Manager Advanced using the Typical installation option from the launchpad.
- A Typical installation creates a typical stand-alone profile for Advanced Process Center.
- A Typical installation can install DB2 Express if an existing database is not specified. DB2 Express is available only for Windows and Linux 32 and 64 bit systems, and the user must be the administrator or root user and must not have another DB2 product installed.
- A Typical installation automatically populates the database.
- `Windows` For Windows operating system, an Advanced Process Center installation automatically installs IBM Process Designer.
- A Typical installation creates shortcuts for Process Center Administrative Console, Playback Server Administrative Console, Process Designer, and WebSphere Administrative Console.
  1. Access the media in one of the following ways, depending on whether you are installing from the product DVD or from images downloaded from Passport Advantage.
     a. Insert the product disk labeled IBM Business Process Manager Advanced into the disk drive. Mount the disk drive if necessary. If autorun is enabled on your workstation, the launchpad program automatically opens, and you can proceed to step 2 on page 165. If autorun is not enabled on your workstation, proceed to step 1b.
     b.

        If autorun is not enabled: If autorun is not enabled on your workstation, enter one of the following commands to start the launchpad manually:
        - `Linux` `UNIX` *mount_point*/launchpad.sh

- • `Windows` (from a command line) *DVD_root*\launchpad.exe
2. Click **Typical installation**.
3. Select to install either the **Process Center** or the **Process Server**. The Process Center is a shared development environment that is used to build process applications. The Process Center includes the Process Designer development tool. The Process Server is the location where process applications are deployed.
4. If you selected to install the Process Center, specify the **Hostname** and installation **Location**, and click **Next**.

   Attention: If you are installing DB2 Express, your installation location cannot contain National Language Strings (NLS).
5. If you selected to install the **Process Server**, specify the **Hostname**, **Location** for the installation, environment **Type** and **Name**, and **Hostname** and **Port** of the Process Center that this server will connect to. If you select **Use this server offline**, the **Hostname** and **Port** fields will be disabled.

   Attention: If you are installing DB2 Express, your installation location cannot contain NL strings.
6. Click **Next**.
7. Select a database:
   - • If you install an embedded DB2 Express database, the database is installed and fully configured. The default values are:
      - – `Linux` Instance user name and password: `bpminst` and `Db2pswd!`
      - – `Linux` Fenced user name and password: `bpmfenc` and `bpmfenc1`
      - – `Linux` Administration server (DAS) user name and password: `bpmadmin` and `bpmadmin1`
      - – `Windows` Administrative user name and password: `bpmadmin` and `Db2pswd!`

      Restriction: User names must not contain National Language Strings (NLS).
   - • If you use an existing database, click the **Setup instructions** link for database-specific field descriptions. See the information about configuring an existing database during a typical installation for the required field values.
8. Click **Next**.
9. On the Licenses page, verify the installation options and read the license agreement. If you agree to the terms of the license agreement, click **I have read and accepted the license agreement and notices** and click **Next**.
10. Click **Install Software**.

    Important:

    If you receive the following warning message during the prerequisite checking, follow the platform-specific steps below to increase the **ulimit** number.

    `Current system has detected a lower level of ulimit than the recommended value of 8799. Please increase the ulimit r`

    `Shutdown your installer. If you are a root user open a command prompt and issue ulimit -n 8799 and then restart the`

    a. Set the maximum number of open files using the following command: `AIX`
       1) Open /etc/security/limits.
       2) Edit or add the **default** section and include this line:

          nofiles = *8800*
       3) Save and close the file.
       4) Log off and log in again.

          `Linux`
       1) Open /etc/security/limits.conf.

2) Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:

   * **hard nofile** *8800*

   * **soft nofile** *8800*

3) Save and close the file.

4) Log off and log in again.

   Solaris

1) Open /etc/system and add the following line to the end of the file:

   set rlim_fd_max=20000

2) Save and close the file.

3) Log off and log in again.

b. Restart the computer.

c. Restart the installer.

The result of a typical installation is a fully functional Process Center on a single machine.

The Typical installation creates and starts the default Process Center profile.

Note: The Process Designer is supported on Windows platform only.

Launch the first steps console to verify your installation, start or stop the server or deployment manager, access the administrative console, start the Profile Management Tool, and access the product documentation.

Configuring an existing database during a typical installation:

Use the information in this topic to determine the correct database values for configuring your existing database during a typical installation.

If you are planning to use an existing database server during a typical installation of IBM Business Process Manager Advanced, you must confirm that the databases already exist and that they are empty. For DB2, the databases must be created with at least a 32K page size.

From the following list, select the database that you are using:

- Table 73 lists the database configuration fields for DB2
- Table 74 on page 167 lists the database configuration fields for Microsoft SQL Server
- Table 75 on page 168 lists the database configuration fields for Oracle

Table 73. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.
Common database	Enter the name for the Common database.
Process Server database	Enter the name for the Process Server database.
Performance Data Warehouse database	Enter the name for the Performance Data Warehouse database.

Table 74. Required database configuration fields for Microsoft SQL Server

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Process Center/Process Server database name	Enter the correct Process Center or Process Server database name.

Common database	For the Common database, enter values for the following parameters:
	• **User name**
	  Enter the Common database user name.
	• **Password**
	  Enter a password to authenticate with the Common database.

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the Common Event Infrastructure bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the SCA application bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the SCA application bus messaging engine.

Table 74. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.

Table 75. Required database configuration fields for Oracle

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Process Center/Process Server database name	Enter the correct Process Center or Process Server database name.

Common database	For the Common database, enter values for the following parameters:
	• `User name`
	  Enter the Common database user name.
	• `Password`
	  Enter a password to authenticate with the Common database.

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.

Table 75. Required database configuration fields for Oracle (continued)

Field	Action needed
System administrator	For the System administrator, enter values for the following parameters: • **User name** Enter the user ID that has privileges to create and drop databases and users or accept the default value of sa. This ID is required when the **Run database scripts to create the database tables** option is selected in the previous screen. • **Password** Enter the password for the user **Admin user name** ID.
Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters: • **User name** Enter the Common Event Infrastructure bus messaging engine user name. • **Password** Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters: • **User name** Enter the SCA application bus messaging engine user name. • **Password** Enter a password to authenticate with the SCA application bus messaging engine.
SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters: • **User name** Enter the SCA system bus messaging engine user name. • **Password** Enter a password to authenticate with the SCA system bus messaging engine.

Custom installation: IBM Business Process Manager Advanced

Use the Custom installation option to install IBM Business Process Manager Advanced if your deployment environment requires additional cluster nodes or if your business requires complex deployment environment and database topologies.

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and you must also ensure that all kernel requirements are met before the DB2 Express installation begins. You can locate the current values by parsing the output of the **ipcs -l** command.

Windows   To install or run IBM Business Process Manager Advanced on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click launchpad.exe and select **Run as administrator**.

Important: Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager Advanced.

This task describes the procedure for installing IBM Business Process Manager Advanced using the custom install option from the Launchpad.

1. Access the media in one of the following ways, depending on whether you are installing from the product DVD or from images downloaded from Passport Advantage.

   - If you are installing from the product DVD, insert the product disk labeled IBM Business Process Manager Advanced into the disk drive. Mount the disk drive if necessary. If autorun is enabled on your workstation, the launchpad program automatically opens, and you can proceed to step 2 If autorun is not enabled on your workstation, enter one of the following commands to start the launchpad manually:

     – `Linux` `UNIX` *mount_point*/launchpad.sh

     – `Windows` (from a command line) *DVD_root*\launchpad.exe

   - If you are installing from images downloaded from Passport Advantage, perform the following steps:

     a. Go to the directory into which you extracted the images.

     b. Enter one of the following commands to start the launchpad:

        – `Linux` `UNIX` *extract_directory*/launchpad.sh

        – `Windows` (from a command line) *extract_directory*\launchpad.exe

2. Click **Custom installation** on the Welcome page.

3. Click **Install as administrative user** to install as an administrative user. If you are in the Administrator group on Windows, or if you are a root user on Linux or UNIX systems, you can install as an administrative user. If you are not an administrative user, or if you want to install to your own user name without administrative privileges, clear this check box.

4. Click **Install**. When you install IBM Business Process Manager Advanced, the required WebSphere Application Server Network Deployment feature pack for XML, and feature pack for Service Component Architecture (SCA) are included.

5. Optional: Click **Help System installation** to Install the product Help System and documentation on your computer. The Help System is an Eclipse framework for displaying the documentation. After the installation, you can display the documentation in stand-alone mode or in server mode. This option is only supported on Windows XP 32 bit, Linux 32 bit, and AIX 32 bit.

6. From the Installation Manager's Install Packages page, select the IBM Business Process Manager Advanced package.

7. Optional: Select IBM DB2 Express to install and use an embedded DB2 Express database.

8. Click **Next** to continue.

   Attention: If you receive any of the following error messages during the prerequisite check, address the product incompatibility issues, click **Back**, fix the problem, and click **Next** to continue:

   - If you selected to install DB2 Express and DB2 is already installed on this system, you will receive the following error message:

     `DB2 is already installed on this system. Either uninstall existing DB2 or deselect DB2 Express from being installed.`

   - If you select to install any of the IBM Business Process Manager V7.5 products to the same WebSphere Application Server location as any other IBM Business Process Manager V7.5 or equivalent, prior release products, you will receive the following error message:

     ```
     IBM Business
     Process Manager V7.5 can not coexist with the following offerings:
     ```

     Installation Manager lists all incompatible offerings for your reference.

9. On the Install Packages page, select the fix packs to be installed and click **Next**.

Important:

If you receive the following warning message during the prerequisite checking, follow the platform-specific steps below to increase the **ulimit** number.

`Current system has detected a lower level of ulimit than the recommended value of 8799. Please increase the ulimit n`

`Shutdown your installer. If you are a root user open a command prompt and issue ulimit -n 8799 and then restart the`

a. Set the maximum number of open files using the following command: `AIX`

   1) Open `/etc/security/limits`.
   2) Edit or add the **default** section and include this line:
      nofiles = *8800*
   3) Save and close the file.
   4) Log off and log in again.

   `Linux`

   1) Open `/etc/security/limits.conf`.
   2) Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:
      * hard nofile *8800*
      * soft nofile *8800*
   3) Save and close the file.
   4) Log off and log in again.

   `Solaris`

   1) Open `/etc/system` and add the following line to the end of the file:
      set rlim_fd_max=20000
   2) Save and close the file.
   3) Log off and log in again.

b. Restart the computer.
c. Restart the installer.

10. On the Licenses page, read the license agreement. If you agree to the terms of the license agreement, click **I accept the terms of the license agreements** and click **Next**.

11. Select a location for the shared resources directory and a location for the Installation Manager and click **Next**.

12. On the Location page, the **Create new package group** option is selected by default. Click **Next** to continue. The Install Packages wizard checks your system for operating system prerequisites. If you are at a higher major release of a supported operating system, or if the operating system itself is not on the supported list, you might encounter a warning. You can continue with the installation, but the installation or product operation might not succeed until you apply maintenance.

    If you see such a warning, go to the product support web pages and obtain the latest maintenance packages to apply after installation. Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

    Attention: If you are installing DB2 Express, your install location can not contain National Language Strings (NLS).

13. On the Features page, select the package features that you want to install. Installation Manager automatically enforces any dependencies with other features and display updated download size and disk space requirements for the installation.

14. Optional: To see the dependency relationships between features, select **Show Dependencies**.

15. When you are finished selecting features, click **Next** to continue.

16. Optional: If you selected to install and use an embedded DB2 Express database, specify the DB2 administrative **User name** and **Password** on the Common Configurations page. The default values are:

- Linux   Instance user name and password: `bpminst` and `bpminst1`
- Linux   Fenced user name and password: `bpmfenc` and `bpmfenc1`
- Linux   Administration server (DAS) user name and Password: `bpmadmin` and `bpmadmin1`
- Windows   Administrative user name and Password: `bpmadmin` and `bpmadmin1`

    Important: If the default password does not comply with the password policy on your operating system (such as Windows 2008), you must use Custom Installation instead of Typical Installation so that you can specify a password that meets the password policy on your system.

    Restriction: User names must not contain National Language Strings (NLS).

17. On the Summary page, review your choices before you install the IBM Business Process Manager Advanced package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.

18. When the installation process is complete, a message confirms the success of the process.

    a. Optional: Click **View Log File** to open the installation log file for the current session in a new window. You must close the Installation Log window to continue.

    b. Select **Profile Management Tool** if you want to launch the Profile Management Tool when you finish or select **None** to complete the installation.

    c. Click **Finish** to close the Installation Manager.

Installing on an existing installation of WebSphere Application Server:

You can install IBM Business Process Manager Advanced on an existing installation of WebSphere Application Server.

1. Click **Custom installation** .
2. Click **Installation on an existing WebSphere Application Server**.
3. Select **Install as administrative user** to install as an administrative user. If you are in the Administrator group on Windows, or if you are a root user on Linux or UNIX systems, you can install as an administrative user. If you are not an administrative user, or if you want to install to your own user name without administrative privileges, clear this check box.
4. Click **Import or Update** to import or update WebSphere Application Server and associated feature packs.

    If WebSphere Application Server has never been imported before, or if it has been updated with the Update Installer after it was last imported, you must import WebSphere Application Server now. Click Import or Update now, and then, when Installation Manager opens, click **Import**.

    If WebSphere Application Server has been imported before, and has not been updated, you can update WebSphere Application Server now. Click **Import or Update** now, and then, when Installation Manager opens, click **Update**. Install available updates for WebSphere Application Server, Feature Pack for XML and Feature Pack for SCA. On the Update Packages page, select **Show all** to display available updates. If you have already installed the Feature Pack for SCA, ensure that the Service Data Objects feature is installed. If not, select the feature on the Feature panel. The Service Data Objects feature requires the Feature Pack for XML.

5. 5. Click **Install** to install IBM Business Process Manager. When you install IBM Business Process Manager, the required WebSphere Application Server, Feature Pack for XML, and Feature Pack for SCA are automatically selected for installation. Clear the check boxes beside WebSphere Application Server and the feature packs if they are already installed.

Installing the IBM Process Designer:

If the IBM Process Designer for authoring processes was not installed when you installed the Process Center, you can download and install the Process Designer from the Process Center console.

Note: Process Designer, Process Center, and each runtime environment must be running the same version of IBM Business Process Manager.

1. Open the Process Center and log in.
2. Click the IBM Process Designer **Download** option. When you are prompted, save the `IBM Process Designer.zip` file to your file system. This file contains everything that you need to install and run Process Designer. Depending on your network connection, the download may take several minutes to complete.
3. Extract the contents of the `IBM Process Designer.zip` file to a temporary directory on your file system.
4. Open a command window and change to the directory where you extracted the contents of the `IBM Process Designer.zip` file.
5. Run one of the following commands to install Process Designer. If you are in the Administrators group on Windows, you can install using the admin command. If you are not an administrative user, or if you want to install to your own user name without administrative privileges, install using the nonadmin command.

   Important: To install Process Designer on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

   Default location (`C:\IBM\ProcessDesigner\v7.5`)
   - **installProcessDesigner_admin.bat**
   - **installProcessDesigner_nonadmin.bat**

   Different location
   - **installProcessDesigner_admin.bat** *installLocation*
   - **installProcessDesigner_nonadmin.bat** *installLocation*

   This command silently installs Installation Manager, if not already installed, and Process Designer. If you have Installation Manager already installed, you see this warning:

   ```
   CRIMAD8B4878BW WARNING: The Installation Manager is already installed.
   00:00.68 WARNING [main] com.ibm.cic.agent.internal.application.HeadlessApplication run
     The Installation Manager is already installed.
   ```

   You can ignore this warning and the Process Designer installation will continue.

To access the shortcut, click **Start** > **IBM Process Designer Edition** > **Process Designer**.

Installing IBM Business Process Manager Advanced silently

You can install the IBM Business Process Manager Advanced product package in *silent* installation mode. When you install in silent mode, the user interface is not available.

Important: Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager Advanced.

Related information:

➜ Installing silently with Installation Manager

➜ Recording a response file with Installation Manager

Installing IBM Business Process Manager Advanced silently using the command line:

You can install IBM Business Process Manager Advanced using the command line.

Before you install IBM Business Process Manager Advanced, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and you must also ensure that all kernel requirements are met before the DB2 Express installation begins. You can locate the current values by parsing the output of the **ipcs -l** command.

If you receive the following warning message during the prerequisite checking, follow the platform-specific steps below to increase the **ulimit** number.

```
Current system has detected a lower level of ulimit than the recommended value of 8799. Please increase the ulimit number t
Shutdown your installer. If you are a root user open a command prompt and issue ulimit -n 8799 and then restart the install
```

1. Set the maximum number of open files using the following command: **AIX**
   a. Open /etc/security/limits.
   b. Edit or add the **default** section and include this line:
      nofiles = *8800*
   c. Save and close the file.
   d. Log off and log in again.

   Linux

   a. Open /etc/security/limits.conf.
   b. Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:
      * hard nofile *8800*
      * soft nofile *8800*
   c. Save and close the file.
   d. Log off and log in again.

   Solaris

   a. Open /etc/system and add the following line to the end of the file:
      set rlim_fd_max=20000
   b. Save and close the file.
   c. Log off and log in again.
2. Restart the computer.
3. Restart the installer.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Advanced installation, you must install them as part of the silent installation. The required base products are:

- Installation Manager
- WebSphere Application Server Network Deployment
- Feature Pack for XML
- Feature Pack for Service Component Architecture (SCA)

The silent installation performs the following tasks:

- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Advanced.

To silently install IBM Business Process Manager Advanced, complete the following steps:

1. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.
2. Run the following command:

   Important: If you are running Windows 7, Windows Vista, or Windows Server 2008, start your command prompt by right-clicking and selecting **Run as administrator**.

    Windows

   `extract_directory\imcl install list_of_product_IDs -acceptLicense -installationDirectory location -repositories repos`

    UNIX   Linux

   `extract_directory/imcl install list_of_product_IDs -acceptLicense -installationDirectory location -repositories repos`

   where:

   - *list_of_product_IDs* is a list of the IDs for the products and features you want to install. The syntax is *productID,feature,feature*, with multiple products separated by spaces.

Table 76. Product IDs

Product	Product ID
IBM BPM Advanced	com.ibm.ws.WPS75
WebSphere Application Server Network Deployment	com.ibm.websphere.ND.v70,core.feature,samples,import.productProviders (includes all required features)
Feature Pack for XML	com.ibm.websphere.XML.v10
Feature Pack for Service Component Architecture (SCA)	com.ibm.websphere.SCA.v10
Installation Manager	com.ibm.cic.agent,agent_core,agent_jre
DB2 for Linux 32-bit	com.ibm.ws.DB2EXP97.linuxia32
DB2 for Linux 64-bit	com.ibm.ws.DB2EXP97.linuxia64
DB2 for Windows 32-bit	com.ibm.ws.DB2EXP97.winia32
DB2 for Windows 64-bit	com.ibm.ws.DB2EXP97.winia64

- *location* is the path to the directory where you want to install the products
- *repository* is the path to the repository where you have extracted the files, one of the following directories:

  `extract_directory/repository/repos_32bit`
  `extract_directory/repository/repos_64bit`

  For more than one repository, separate the repository names with commas.

- *key=value* is a list of the keys and values you want to pass to the installation, separated by commas. Do not put spaces between the commas.

Table 77. Keys

Key	Description
user.select.64bit.image	If you are installing on a 64-bit operating system, add the following line exactly: `user.select.64bit.image,,com.ibm.websphere.ND.v70=true` The default value is false.
user.db2.admin.username	Windows only. User name with authority to access the DB2 database. The default value is bpmadmin.
user.db2.admin.password	Windows only. Password for the user name above. The default value is bpmadmin1.
user.db2.port	Port for the DB2 database. The default value is 50000.
user.db2.instance.username	Linux and UNIX only. DB2 instance user name. The default value is bpminst.
user.db2.instance.password	Linux and UNIX only. Password for the user name above. The default value is bpminst1.
user.db2.fenced.username	Linux and UNIX only. Fenced user name. The default value is bpmfenc.
user.db2.fenced.password	Linux and UNIX only. Password for the user name above. The default value is bpmfenc1.
user.db2.das.username	Linux and UNIX only. Administration server (DAS) user name. The default value is bpmadmin.
user.db2.das.password	Linux and UNIX only. Password for the user name above. The default value is bpmadmin1.

- *logName* is the name of the log file to record messages and results.

  Running this command installs the product with the default features. If you want to install specific features or make other changes, see the reference link for the command-line arguments for imcl.

Installation Manager installs the products that are listed and writes a log file to the directory that you specified.

The following example installs IBM Business Process Manager Advanced, WebSphere Application Server Network Deployment, Feature Pack for XML, Feature Pack for SCA, and DB2 for Windows 32-bit on Windows.

```
imcl install com.ibm.ws.WPS75 com.ibm.websphere.ND.v70,core.feature,samples,import.productProviders.feature,import.configLa
```

You must define a stand-alone server profile or a deployment manager in the Profile Management Tool or using the manageprofiles command. Only profiles created with the Profile Management Tool or manageprofiles command can be used in production.

Related reference:

➡ Command-line arguments for imcl

Installing IBM Business Process Manager Advanced silently using a response file:

You can install IBM Business Process Manager Advanced by creating a response file and then running a command to use that response file to install the product. You must install silently from an electronic installation image (not a DVD).

Before you install IBM Business Process Manager Advanced, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and you must also ensure that all kernel requirements are met before the DB2 Express installation begins. You can locate the current values by parsing the output of the **ipcs -l** command.

If you receive the following warning message during the prerequisite checking, follow the platform-specific steps below to increase the **ulimit** number.

```
Current system has detected a lower level of ulimit than the recommended value of 8799. Please increase the ulimit number
Shutdown your installer. If you are a root user open a command prompt and issue ulimit -n 8799 and then restart the insta
```

1. Set the maximum number of open files using the following command: `AIX`
   a. Open /etc/security/limits.
   b. Edit or add the **default** section and include this line:
      nofiles = *8800*
   c. Save and close the file.
   d. Log off and log in again.

   `Linux`

   a. Open /etc/security/limits.conf.
   b. Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:
      * hard nofile *8800*
      * soft nofile *8800*
   c. Save and close the file.
   d. Log off and log in again.

   `Solaris`

   a. Open /etc/system and add the following line to the end of the file:
      set rlim_fd_max=20000
   b. Save and close the file.
   c. Log off and log in again.
2. Restart the computer.
3. Restart the installer.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Advanced installation, you must install them as part of the silent installation. The required base products are:
- Installation Manager
- WebSphere Application Server Network Deployment
- Feature Pack for XML
- Feature Pack for Service Component Architecture (SCA)

The silent installation performs the following tasks:

- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Advanced.

To silently install IBM Business Process Manager Advanced, complete the following steps:

1. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.
2. Create the response file that will install the required base products and IBM Business Process Manager Advanced. Copy the sample response file from the following directory to create your own response file:

   extract_directory/responsefiles/BPM/template_response.xml
3. Modify the parameters as directed in the text of the response file template to create your response file. You can also create a response file by recording your actions in Installation Manager. When you record a response file, the selections that you make in Installation Manager are stored in an XML file. When you run Installation Manager in silent mode, Installation Manager uses the data in the XML response file to perform the installation.

   Important: Verify that the repository locations at the top of the sample response file point to the correct location in your environment.
4. Run the following command:

   Important: If you are running Windows 7, Windows Vista, or Windows Server 2008, start your command prompt by right-clicking and selecting **Run as administrator**.

   Administrator or Root user: Windows

   ```
   extract_directory\IM\installc.exe -acceptLicense input
   extract_directory\responsefiles\productID\template_response.xml -log preferred_log_location\silent_install.log
   ```

   UNIX   Linux

   ```
   extract_directory/IM/installc -acceptLicense input
   extract_directory/responsefiles/productID/template_response.xml -log preferred_log_location/silent_install.log
   ```

   Nonadministrator/nonroot user: Windows

   ```
   extract_directory\IM\userinstc.exe -acceptLicense input
   extract_directory\responsefiles\productID\template_response.xml -log preferred_log_location\silent_install.log
   ```

   UNIX   Linux

   ```
   extract_directory/IM/userinstc -acceptLicense input
   extract_directory/responsefiles/productID/template_response.xml -log preferred_log_location/silent_install.log
   ```

Installation Manager installs any required prerequisites and IBM Business Process Manager Advanced, and writes a log file to the directory you specified.

You must define a stand-alone server profile or a deployment manager in the Profile Management Tool or using the manageprofiles command. Only profiles created with the Profile Management Tool or manageprofiles command can be used in production.

Related information:

⏩ Installing silently with Installation Manager

⏩ Recording a response file with Installation Manager

Upgrading configurations

Upgrade a configuration of IBM Business Process Manager by using IBM Installation Manager to install the new configuration over a previously installed configuration in the same package group.

The configuration you want to upgrade must have been installed using Installation Manager. Before you perform the upgrade, shut down any servers or network deployment environments.

The supported product upgrade paths are:

*   IBM Business Process Manager Express to IBM Business Process Manager Standard
*   IBM Business Process Manager Express to IBM Business Process Manager Advanced
*   IBM Business Process Manager Standard to IBM Business Process Manager Advanced

There are no upgrade paths to or from the IBM Business Process Manager Advanced - Process Server configuration.

Note: When you perform a configuration upgrade, any existing IBM Business Process Manager profiles are left unchanged.

1. Start the Installation Manager.
2. Click **File** > **Preferences** > **Repositories** and browse to the repository that contains the new configuration package. Click **Add Repository**.
3. From the Installation Manager welcome page, click **Install**.
4. On the Install Packages page, select the configuration that you want to install. If you are upgrading to IBM Business Process Manager Advanced, you must also select the feature pack for Service Component Architecture (SCA), as well as the SDO feature of the SCA feature pack.
5. Click **Next** to continue.
6. On the Licenses page, read the license agreement. If you agree to the terms of the license agreement, click **I accept the terms in the license agreements** and click **Next**.
7. On the Install Location page, select the package group that contains the configuration that you want to upgrade.
8. On the Summary page, review your choices before installing the package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.
9. When the installation process is complete, a message confirms the success of the process.
    a. Optional: Click **View Log File** to open the installation log file for the current session in a new window. Close the Installation Log window to continue.
    b. Select **Profile Management Tool** to launch the Profile Management Tool when you finish, or select **None** to complete the installation.
    c. Click **Finish** to close the Installation Manager.

Uninstalling IBM Business Process Manager

You can remove IBM Business Process Manager interactively or silently.

Uninstalling IBM Business Process Manager Advanced interactively:

The Uninstall option in the Installation Manager enables you to uninstall packages from a single installation location. You can also uninstall all the installed packages from every installation location.

To uninstall the packages, you must log in to the system using the same user account that you used to install the product packages. A package cannot be uninstalled when another package has a dependency on it, unless the dependent package is also selected to be uninstalled.

1. Close the programs that you installed using Installation Manager.

2. Stop all running servers.

3. Start the Installation Manager. On the Start page, click **Uninstall**. `Windows` On Windows, you can also click **Start** > **Programs** > **IBM** > **IBM Business Process Manager Advanced** > **Uninstall**.

4. On the Uninstall Packages page, select IBM Business Process Manager Advanced and associated packages and click **Next**. `Windows` If you selected **Start** > **Programs** > **IBM** > **IBM Business Process Manager Advanced** > **Uninstall** in the previous step, IBM Business Process Manager Advanced is pre-selected for uninstallation on the Uninstall Packages page.

5. On the Summary page, review the list of packages that will be uninstalled and then click **Uninstall**. After the uninstallation finishes, the Complete page opens.

6. Click **Finish** to exit the wizard.

When IBM Business Process Manager Advanced is uninstalled, all profiles that are augmented to IBM Business Process Manager Advanced are removed, including any WebSphere Application Server profiles that are augmented to IBM Business Process Manager Advanced.

If you plan to reinstall IBM Business Process Manager Advanced, and databases were created in the previous install, the databases must be dropped before you can create a new profile. See Reinstallation cannot create new profile.

`Linux` If you plan to reinstall IBM Business Process Manager Advanced, you must delete the remaining DB2 Express entries in the /etc/service file. This is necessary because the new installation requires that port 50000 be available. Search the /etc/service file and remove any references to DB2 Express and port 50000. For example:

```
db2c_bpminst 50000/tcp
```

or

```
db2c_db2inst1 50000/tcp
```

Uninstalling IBM Business Process Manager silently:

You can use the command-line mode of the Installation Manager to uninstall IBM Business Process Manager.

Close all programs that you installed using the Installation Manager.

To uninstall, you must log in to the system using the same user account that you used to install.

To silently uninstall IBM Business Process Manager, complete the following steps:

1. Open a command prompt, and change directories to the /eclipse/tools directory under Installation Manager.

   Important: If you are running Windows 7, Windows Vista, or Windows Server 2008, start your command prompt by right-clicking and selecting **Run as administrator**.

2. Make the appropriate replacements and run the following command:
   ```
   imcl uninstall list_of_product_IDs -installationDirectory installationDirectory -log logLocation
   ```
   a. Replace *list_of_product_IDs* with a list of the IDs for the products you want to uninstall, separated by spaces.

Table 78. Product IDs

Product	Product ID
IBM BPM Advanced	com.ibm.ws.WPS75
WebSphere Application Server Network Deployment	com.ibm.websphere.ND.v70
Feature Pack for XML	com.ibm.websphere.XML.v10
Feature Pack for Service Component Architecture (SCA)	com.ibm.websphere.SCA.v10
Installation Manager	com.ibm.cic.agent
DB2 for Linux 32-bit	com.ibm.ws.DB2EXP97.linuxia32
DB2 for Linux 64-bit	com.ibm.ws.DB2EXP97.linuxia64
DB2 for Windows 32-bit	com.ibm.ws.DB2EXP97.winia32
DB2 for Windows 64-bit	com.ibm.ws.DB2EXP97.winia64

   b. Replace *installationDirectory* with the location where you installed the product.
   c. Replace *logLocation* with the location and file name to log the information.

Installation Manager uninstalls the list of products and writes a log file to the directory that you specified.

The following example uninstalls IBM Business Process Manager, WebSphere Application Server Network Deployment, Feature Pack for XML, Feature Pack for SCA, and DB2 for Windows 32-bit from Windows.

```
C:\Program Files\IBM\Installation Manager\eclipse\tools>imcl uninstall com.ibm.ws.WPS75 com.ibm.websphere.ND.v70 com.ibm
```

Configuring IBM Business Process Manager Advanced

You can configure IBM Business Process Manager to form a stand-alone or network deployment environment.

The configurations (Advanced, Standard, or Express) provide different levels of business process management functionality. For example, Business Process Choreographer functionality is available only for IBM Business Process Manager Advanced. For a full description of IBM Business Process Manager Advanced configurations, see IBM Business Process Manager, Version 7.5 configuration capabilities.

The configuring phase consists of two types of tasks: product configuration tasks and environment configuration tasks. Product configuration tasks are for setting up the product profiles and configuring the database, while environment configuration tasks are for setting up and generating the deployment environment.

One of the environment configuration tasks is creating the clusters of the deployment environment. Clusters in a deployment environment require specific tables, schemas, and user permissions based on the functional purpose of the cluster. For example, a deployment environment could include both a messaging infrastructure cluster and an application deployment target cluster. The messaging infrastructure cluster accesses messaging engine database tables and the application deployment target cluster accesses Business Process Choreographer database tables.

Figure 12 on page 182 illustrates the task flow for planning, installing, and configuring the product and the environment.

Figure 12. Task flow for planning, installing, and configuring the product and the environment
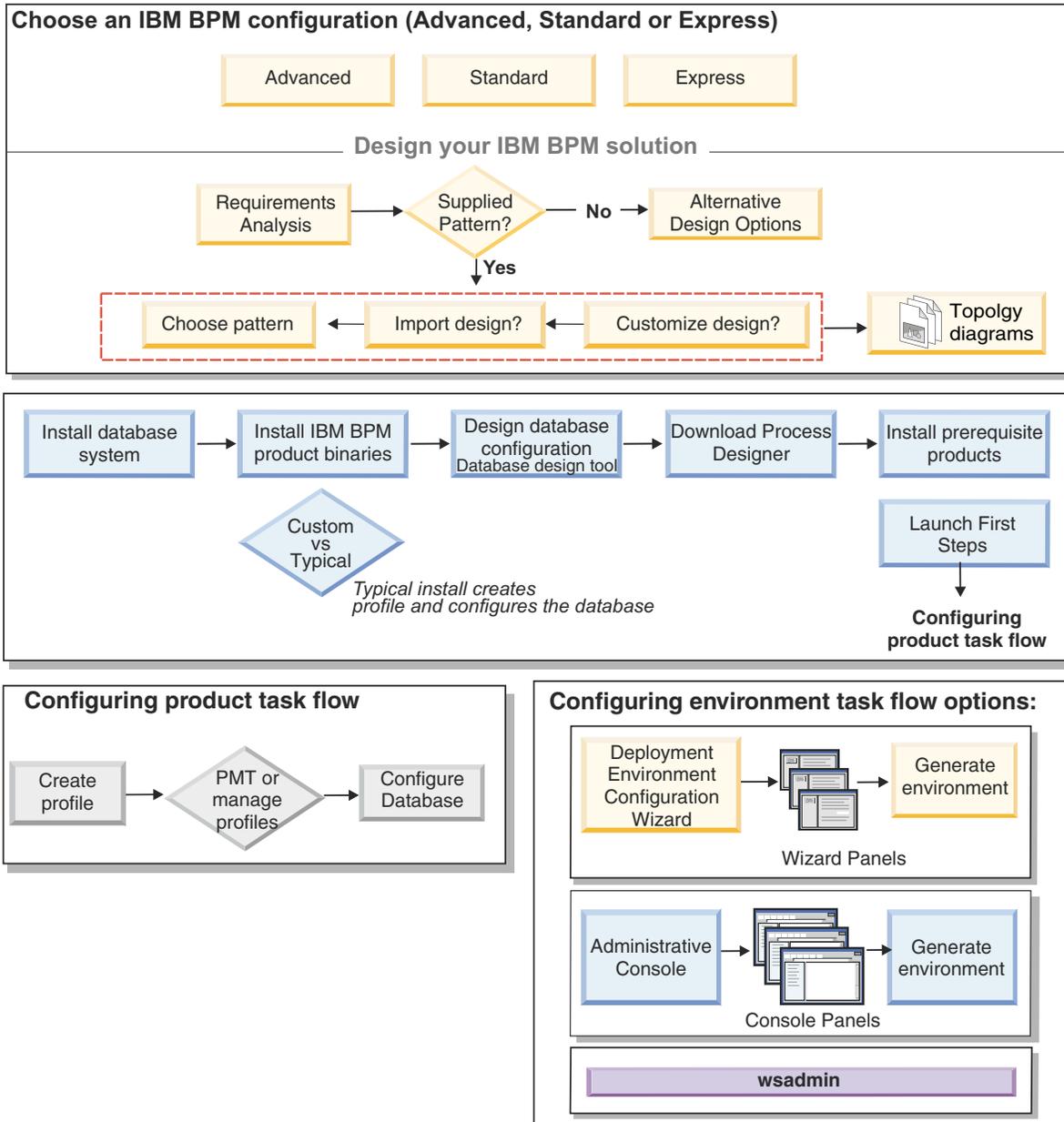
You can create the product databases before installing the product, after installing the product (but before profile creation), or after you create the profiles.

Creating and augmenting profiles

After you install the product, you must create one or more profiles to define the runtime environment.

Configuration prerequisites and considerations

Before you configure the software for IBM Business Process Manager, review the prerequisites and other considerations.

Prerequisites for creating or augmenting profiles:

Before creating or augmenting a profile, you must ensure that a series of prerequisites have been met.

- You must have an existing installation of IBM Business Process Manager. If you do not, see Installing and configuring IBM Business Process Manager for installation procedures.
- If you are not the user ID who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. See "Granting write permission of files and directories to nonroot users for profile creation" on page 184 for instructions on how to obtain these permissions. You must create your profiles in a directory other than *install_root*/profiles.

-   Windows

  To install or run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can run be executed from the install_root\bin\ProfileManagement directory:

  ```
  runas /user:MyAdminName /env pmt.bat
  ```

  Non-administrative users are prompted for the administrator password.

-   Windows

  To install or run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the install_root\bin directory:

  ```
  runas /env /user:MyAdminName "manageprofiles -create -templatePath install_root/profileTemplates/BPM/default.procsvr.a
  ```

  Non-administrative users are prompted for the administrator password.

- You must know the type of profile you want to create or augment. For more information about profiles, see Profiles.
- You must follow the correct procedure to create or augment the profile:
  - If you want to create profiles for a IBM Business Process Manager stand-alone configuration, see Creating stand-alone profiles using the Profile Management Tool.

    The documentation includes information about creating process center profiles and process server profiles.
  - If you want to create profiles for a IBM Business Process Manager network deployment configuration, see Creating deployment manager profiles using the Profile Management Tool.

    The documentation includes information about creating deployment manager and custom (managed node) profiles for both Process Center and Process Server.
  - If you want to augment an existing WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus profile into a IBM Business Process Manager profile, see one of the following topics:

    Important: A profile that you plan to augment cannot define a managed node that is already federated.

    - To augment stand-alone server profiles, see Augmenting Process Server stand-alone server profiles or Augmenting Process Center stand-alone server profiles
    - To augment profiles for a network deployment environment configuration, see Augmenting profiles in a network deployment configuration or Augmenting profiles in a network deployment configuration
- You cannot use the Profile Management Tool to create or augment profiles on IBM Business Process Manager installations on 64-bit architectures except on the Linux on zSeries platform. To create or augment profiles on other 64-bit architectures, you can use the **manageprofiles** command-line utility.

Note: You can use the Profile Management Tool on these architectures if you use a IBM Business Process Manager 32-bit installation.

- You must shut down any servers associated with a profile you plan to augment.
- You must review Planning your topology for information about reserved terms and issues that you must consider when naming your profile, node, host, server (if applicable), and cell (if applicable).
- You must have enough disk and temporary space to create or augment the new profile. For information about space requirements, see IBM Business Process Manager detailed system requirements at
  - For Advanced configuration: http://www.ibm.com/software/integration/business-process-manager/advanced/sysreqs/
  - For Standard configuration: http://www.ibm.com/software/integration/business-process-manager/standard/sysreqs/
  - For Express configuration: http://www.ibm.com/software/integration/business-process-manager/express/sysreqs/

  and select the link to your version of IBM Business Process Manager.

Related concepts:

"Database prerequisites for creating or augmenting profiles" on page 186
Before creating or augmenting a profile, you must ensure that a series of database prerequisites have been met.

Related tasks:

"Creating Process Center deployment manager and custom profiles using manageprofiles" on page 257
Use the `manageprofiles` command-line utility to create Process Center deployment manager and custom profiles for a network deployment configuration .

Granting write permission of files and directories to nonroot users for profile creation:

The product installer (who can be a root/Administrator or nonroot user) can grant write permission to the appropriate IBM Business Process Manager files and directories to nonroot users. The nonroot users can then create profiles. Alternatively, the product installer can create a group for users who are authorized to create profiles or give individual users the authority to create profiles.

The following example task shows how to create a group that is authorized to create profiles.

Throughout this text, the terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager.

Restriction: IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonroot users. Thus, profile augmentation by nonroot users of profiles owned by another user is not supported.

Nonroot users create their own profiles so that they can manage their own environments. Typically, they manage environments for development purposes.

Nonroot users must store their profiles in their private directory structure, not in the *install_root*/**profiles** directory of the product.

Restriction: An ease-of-use limitation exists for nonroot users who create profiles. Mechanisms within the Profile Management Tool that suggest unique names and port values are disabled for nonroot users. The nonroot user must change the default field values in the Profile Management Tool for the profile name, node name, cell name, and port assignments. The product installer can assign nonroot users a range of values for each of the fields, and assign responsibility to the nonroot users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, then certain directories and files were created. Because these directories and files were created, skip the steps in this topic that create these directories and files. If no profile was previously created, then you must complete the steps to create the required directories and files. In most cases, a profile has been created previously.

Steps the product installer must perform to grant appropriate permissions

The installer can perform the following steps to create the `profilers` group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. (The product installer can be a root/Administrator or nonroot user.)
2. Using operating system commands, perform the following steps:
   - Create a group named profilers, which will contain all users who can create profiles.
   - Create a user named user1, who can create profiles.
   - Add users product_installer and user1 to the profilers group.
3. `Linux` `UNIX` Log off and log back on as the installer to pick up the new group.
4. Create the following directories as the installer if no profile exists:
   - `Linux` `UNIX` Create the *install_root***/logs/manageprofiles** directory:

     `mkdir install_root/logs/manageprofiles`

     `Windows` Create the *install_root***\logs\manageprofiles** directory by following instructions in the Windows documentation. For this example procedure, the directory is:

     `install_root\logs\manageprofiles`

   - `Linux` `UNIX` Create the *install_root***/properties/fsdb** directory:

     `mkdir install_root/properties/fsdb`

     `Windows` Create the *install_root***\properties\fsdb** directory by following instructions in the Windows documentation. For this example procedure, the directory is:

     `install_root\properties\fsdb`

5. As the installer, follow directions for your operating system to create the profileRegistry.xml file if no profile exists. For this example, the file paths are:

   `Linux` `UNIX`

   `install_root/properties/profileRegistry.xml`

   `Windows`

   `install_root\properties\profileRegistry.xml`

   Follow instructions for your operating system to add the following information to the profileRegistry.xml file. The file must be encoded as UTF-8.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```

6. As the product installer, use operating system tools to change directory and file permissions.

   `Linux` `UNIX` The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **/opt/IBM/WebSphere/ProcServer**.

```
export WASHOME=/opt/IBM/WebSphere/ProcServer
echo $WASHOME
echo "Performing chggrp/chmod per WAS directions..."
chgrp profilers $WASHOME/logs/manageprofiles
chmod g+wr  $WASHOME/logs/manageprofiles
chgrp profilers $WASHOME/properties
chmod g+wr  $WASHOME/properties
chgrp profilers $WASHOME/properties/fsdb
```

```
chmod g+wr  $WASHOME/properties/fsdb
chgrp profilers $WASHOME/properties/profileRegistry.xml
chmod g+wr  $WASHOME/properties/profileRegistry.xml
chgrp -R profilers $WASHOME/profileTemplates
```

> **Linux** Issue the following additional commands:

```
chgrp profilers $WASHOME/properties/Profiles.menu
chmod  g+wr $WASHOME/properties/Profiles.menu
```

> **Windows** The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **C:\Program Files\IBM\WebSphere\ProcServer**. Follow instructions in the Windows documentation to give the profilers group read and write permission to the following directories and their files:

```
@WASHOME\logs\manageprofiles
@WASHOME\properties
@WASHOME\properties\fsdb
@WASHOME\properties\profileRegistry.xml
```

> You might have to change the permissions on additional files if the nonroot user encounters permission errors. For example, if the product installer authorizes a nonroot user to delete a profile, then the product installer might have to delete the following file:

> > **Linux**   **UNIX**   *install_root*/**properties/profileRegistry.xml_LOCK**

> > **Windows**   *install_root***properties\profileRegistry.xml_LOCK**

> Give write access to the nonroot user for the file to authorize the user to delete the file. If the nonroot user still cannot delete the profile, then the product installer can delete the profile.

Result

The installer created the **profilers** group and gave the group proper permissions to certain directories and files to create profiles. These directories and files are the only ones in the installation root of IBM Business Process Manager to which a nonroot user needs to write to create profiles.

What to do next

The nonroot user that belongs to the **profilers** group can create profiles in a directory that the nonroot user owns and to which the nonroot user has write permission. However, the nonroot user cannot create profiles in the installation root directory of the product.

A nonroot user ID can manage multiple profiles. The same nonroot user ID can manage an entire profile, whether it is the deployment manager profile, a profile that contains the servers and the node agent, or a custom profile. A different user ID can be used for each profile in a cell, whether global security or administrative security is enabled or disabled. The user IDs can be a mix of root and nonroot user IDs. For example, the root user might manage the deployment manager profile, while a nonroot user might manage a profile that contains servers and the node agent, or vice versa. However, typically, a root user or a nonroot user can manage all profiles in a cell.

The nonroot user can use the same tasks to manage a profile that the root user uses.

Database prerequisites for creating or augmenting profiles:

Before creating or augmenting a profile, you must ensure that a series of database prerequisites have been met.

The following prerequisites relate to product databases:
- During the profile creation or augmentation process, you are configuring the Common database used by selected components. Whether you plan to create new databases and tables or postpone actual

database configuration by producing scripts that must be run manually by you or your database administrator (DBA), you must know the database details listed in the following topics:

– manageprofiles parameters

- If you plan to use or create the Common database repository on a remote server, you must create it before beginning to create or augment the profile. You can create a repository on the local server or use an existing one on a remote server.

- If you plan to use DB2 on a remote z/OS workstation for the Common database repository, your DBA must create, on the z/OS server, a database called **CMNDB**, as well as the correct storage group for it. The DBA can use the site's standard database definition tools and procedures.

  Before running **CreateDB.sh**, you must allocate the following buffer pools with these DB2 commands:

  ```
  -ALTER BUFFERPOOL (BP1) VPSIZE(20000)
  -ALTER BUFFERPOOL (BP2) VPSIZE(20000)
  -ALTER BUFFERPOOL (BP3) VPSIZE(20000)
  ```

  You must also make sure that permission to use them has been granted as follows:

  ```
  GRANT USE OF BUFFERPOOL BP1 TO PUBLIC;
  GRANT USE OF BUFFERPOOL BP2 TO PUBLIC;
  GRANT USE OF BUFFERPOOL BP3 TO PUBLIC;
  ```

  – To create the **event** and **eventcat** databases and associated storage groups, the DBA can refer to Configuring the event database and its subtopics.

- Database administrator (DBA) privileges are required for the database configuration panels that are part of creating a deployment manager profile.

  If the user ID does not have DBA privileges, use this workaround:

  1. Install the product without creating a profile.
  2. Use the Profile Management Tool to create the deployment manager and the custom profiles using the Advanced path for all. Do not use the Typical path. Do not create database tables as part of the profile creation process.
  3. Have the DBA create the Common database. See Creating the Common database and tables after profile creation or augmentation.
  4. Federate the custom profiles to the deployment manager.
  5. Using the administrative console, create the required deployment environment. See Creating a deployment environment using a pattern for more information.

- Linux UNIX If you plan to use DB2 Universal Database™:

  You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands, which are used during profile creation. Add the **db2profile** script to the /etc/profile directory:

  ```
  vi /etc/profile and add below lines:

  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root to the /etc/group administrative groups:

  ```
  vi /etc/group and update below lines:

  dasadm:|;101:dasusr1,db2inst1,root
  db2iadm:|:102;root
  db2fadm:|:103;db2fenc1,root
  ```

  Typical profile creation Exceptions:

  When the **db2profile** script is not run:

  ```
  /opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
  java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
  wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
  ```

When the DB2 database manager is not running:

```
SQL1032N No start database manager command was issued. SQLSTATE=57019
```

When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

```
SQL1092N "ROOT" does not have the authority to perform the requested command.

When DB2 database manager is down or not running...

SQL1032N  No start database manager command was issued.  SQLSTATE=57019
```

- If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a standalone profile, and will put the messaging engine tables in the Common Database, then you must perform the following steps:

  1. Manually add four schemas to the Common database before creating stand-alone server profiles. These schemas are *XXX*SS00, *XXX*SA00, *XXX*CM00, and *XXX*BM00, where *XXX* is the first three characters of the name of the Common database.

  2. The following command configures the Messaging Engines on SQL Server with the schemas that were defined above. The command uses the **dbUserId** and **dbPassword** that you specified for CommonDB.

     For **Microsoft SQL Server JDBC 1.2 driver**

     ```
     install_root/bin/manageprofiles -create -templatePath install_root/profileTemplates/default.wbiserver -dbType MSSQLSE
     ```

     For **Microsoft SQL Server JDBC 2.0 driver**

     ```
     install_root/bin/manageprofiles -create -templatePath install_root/profileTemplates/default.wbiserver -dbType MSSQLSE
     ```

Related concepts:

"Prerequisites for creating or augmenting profiles" on page 183
Before creating or augmenting a profile, you must ensure that a series of prerequisites have been met.

Starting the Profile Management Tool

Before you start the Profile Management Tool, be aware of the restrictions and ensure that certain prerequisites are met. You can start the Profile Management Tool in several ways, depending on the platform on which it is running.

Restrictions:

- You cannot use the Profile Management Tool to create or augment profiles on IBM Business Process Manager installations on 64-bit architectures except on the Linux on zSeries platform. To create profiles on other 64-bit architectures, you can use the **manageprofiles** command-line utility. For information about using the **manageprofiles** command-line utility, see "Creating profiles using the manageprofiles command-line utility" on page 248. You can also use the Profile Management Tool on IBM Business Process Manager 32-bit installations on these architectures.

- **Vista** **Windows 7** **Restriction for nonadministrative users with multiple instances:** If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users either install the product by themselves or be given permission to access the other product instances.

Linux **UNIX** **Windows** The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, then English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Run the following command:

- **Linux** **UNIX** *install_root*/**java/bin/java -Duser.language=***locale install_root*/**bin/
ProfileManagement/startup.jar**

- **Windows** *install_root***java\bin\java -Duser.language=***locale install_root***bin\ProfileManagement\
startup.jar**

For example, to start the Profile Management Tool in the German language on a Linux system, type the following command:

```
install_root/java/bin/java -Duser.language=de install_root/  \
bin/ProfileManagement/startup.jar
```

Starting the tool on all platforms

Start the tool on any platform from the First steps console. See Starting the First steps console: IBM Business Process Manager Advanced or topics/tins_bpm_ps_start_firststeps.dita for how to start the First steps console.

Starting the tool on Linux and UNIX platforms

Linux **UNIX** You can start the tool on Linux and UNIX platforms by running the command *install_root*/**bin/ProfileManagement/pmt.sh**

Linux On Linux platforms only, you can also use operating system menus to start the Profile Management Tool. For example, click *Linux_operating_system_menus_to_access_programs* > **IBM WebSphere** > *your_product* > **Profile Management Tool**.

Starting the tool on Windows platforms

Windows You can use the following methods to start the tool on Windows platforms:
- Use the Windows Start menu. For example, select **Start > Programs** *or* **All Programs > IBM WebSphere > Business Process Manager 7.0 > Profile Management Tool**.
- Run the command *install_root***bin\ProfileManagement\pmt.bat**

Creating stand-alone profiles after a custom installation

After you perform a Custom installation, you can use the Profile Management Tool or the `manageprofiles` command-line utility to create a stand-alone server profile.

Choose one of the links below for information about creating profiles using the Profile Management Tool or the `manageprofiles` command-line utility.

Related concepts:

"Using the manageprofiles command" on page 248
You can achieve the same configurations that you set up using Profile Management Tool and Deployment Environment by using the manageprofiles command-line utility and wsadmin.

Related tasks:

"Creating Process Server stand-alone profiles using manageprofiles" on page 253
Use the `manageprofiles` command-line utility to create Process Server stand-alone profiles for IBM Business Process Manager Advanced .

Creating Process Server stand-alone profiles using the Profile Management Tool:

You can use the Profile Management Tool to create the profile for a stand-alone environment. The stand-alone environment functions independently from all other servers and is managed from its own administrative console.

Federating Process Server stand-alone profiles is not supported in version 7.5.

- Review Prerequisites for creating or augmenting profiles.

- Solaris When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/ `.Xdefaults` file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

Tip: Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create profiles, as described in Configuring the software using command-line utilities and wsadmin.

Use the procedure in this task topic if you are creating a stand-alone *Process Server* profile for IBM Business Process Manager Advanced. The steps describe both **Typical profile creation** and **Advanced profile creation** options.

1. Start the Profile Management Tool. For methods to start this tool, see Starting the Profile Management Tool. The Welcome page displays.

2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.

3. In the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the configuration for which you are creating the profile and expand the section. .

   For example, if you are creating profiles for IBM BPM Advanced, select the option for **IBM BPM Advanced, Process Server Stand-alone** profile and click **Next**. If you are creating profiles for IBM BPM Standard, select the option for **IBM BPM Standard, Process Server Stand-alone** profile and click **Next**. If you are creating profiles for IBM BPM Express, select the option for **IBM BPM Express, Process Server Stand-alone** profile and click **Next**

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.

5. On the Profile Creation Options page, create the stand-alone profile using one of the following options:

   Typical profile creation
   > Creates a profile with default configuration settings.

   Advanced profile creation
   > Creates a profile using the configuration values you specify.

   Table 79 on page 191 provides more information about the options for creating a stand-alone profile.

Table 79. Selecting the creation option for your stand-alone profile

Select	When you want to . . .
Typical profile creation	Allow the Profile Management Tool to perform the following actions: • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of WebAS (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of WebAS (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for the CommonDB, the Process Server database and the Performance Data Warehouse database.
Advanced profile creation	• Specify a database design file to be used for the database configuration. • Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • Create a web server definition. • Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services. • Configure Business Space powered by WebSphere. **Note:** Business Space powered by WebSphere is configured in the common database. • Configure Business Rules Manager and create a Business Process Choreographer sample configuration. **Important:** When you create a stand-alone profile for use with a DB2 database, a sample Business Process Choreographer configuration is created by default. It uses its own schema within the common database (CMNDB) and the schema name is always BPEDB. If these conditions are too restrictive, disable the Business Process Choreographer configuration during profile creation and configure Business Process Choreographer after you create the profile. During profile creation, Business Process Choreographer cannot be configured to use a database other than DB2. To use an Oracle or a SQL Server database, configure Business Process Choreographer after you create the profile.

• If you selected **Typical profile creation**, go to step 6.
• If you selected **Advanced profile creation** , go to step 11 on page 199.

6. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

   Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

   Click **Next**.

7. From the Process Server Configuration page, set the values for the following parameters

Environment name
> Specifies the name of the environment you are configuring.

Select an environment type

> Options are as follows:
> - Production
>
>   Select **Production** if the server will serve in a production capacity.
> - Stage
>
>   Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.
> - Test
>
>   Select **Test** if the server you are configuring will be used as a testing environment.
>
> The environment type, which is set during installation, refers to how the Process Server is used and determines the environment variables and values that are applicable to the server. Environment-specific variables can be set for each process application, and then define values for each type of environment in which a process runs. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Server you are configuring will be accessed and used to review content and new functionality.

Process Center configuration information
> Configure the Process Center that the Process Server will connect to.
>
> Set parameters for the following fields:
> - **Use server offline**
>
>   Indicate whether the server you are configuring is an offline server.
>
>   An offline server is a Process Server that is not connected to the Process Center.
>
>   Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.
> - **Protocol**
>
>   Select either **http://** or **https://** as the connection protocol to the Process Center.
> - **Host name**
>
>   Type the host or virtual host that this Process Server needs to communicate with Process Center. Use a fully qualified host name.
>
>   In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
> - **Port**
>
>   Type the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

> You can test the connection to the Process Center by clicking **Test Connection**.

> Click **Next**.

8. On the Database Configuration page, perform the following actions:
   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

If the database product you are using with the software already exists, select **Use an existing local or remote database** .

- In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
- In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
- In the **Common database name** field, enter a name for the common database or accept the **CMNDB** default value.
- Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

  If you do not select the checkbox, the scripts are output to the default directory.
- Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

For Oracle, the **Process Server database name** and the **Performance Data Warehouse database** name (actually this is the database instance name) can be the same as the **Common database name**. For all other database types, the database names must be unique.

9. In the Database Configuration - Part 2 page, complete the configuration of the database you selected.

   In the Database Configuration (Part 2) page, complete the configuration of the database you selected.

   Configuration parameters for all databases are listed in the sub-steps that follow:
   - For a listing of DB2 parameter definitions, click here
   - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
   - For a listing of Microsoft SQL Server parameter definitions, click here
   - For a listing of Oracle parameter definitions, click here

   a. Set values for the DB2 Database

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 80. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

Click Next to go to the Profile Summary page.

b. Set values for the DB2 Universal Database for z/OS

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 81. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: ${WAS_INSTALL_ROOT}/jdbcdrivers/DB2
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of 446 or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

Click Next to go to the Profile Summary page.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 82. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**

Common database	For the Common database, enter values for the following parameters:
	• `User name`
	  Enter the Common database user name.
	• `Password`
	  Enter a password to authenticate with the Common database.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 82. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	   Enter the Process Server database user name.
	• **Password**
	   Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	   Confirm the password by reentering it.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	   Enter the Performance Data Warehouse database user name.
	• **Password**
	   Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	   Confirm the password by reentering it.

Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: ${WAS_INSTALL_ROOT}\jdbcdrivers\ SQLServer

Click **Next** to go to the Database Configuration (Part 3) page.

Table 83. Required database configuration fields for Microsoft SQL Server

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	• **User name**
	   Enter the Common Event Infrastructure bus messaging engine user name.
	• **Password**
	   Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	• **Confirm password**
	   Confirm the password by reentering it.

Table 83. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA application bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA application bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Click Next to go to the Profile Summary page.

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 84. Required database configuration fields for Oracle

Field	Action needed

Common database	For the Common database, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Common database user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Common database.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Process Server database user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Process Server database.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.
	
	Note: Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Performance Data Warehouse database user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Performance Data Warehouse database.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.
	
	Note: The Performance Data Warehouse database user name and the Process Server database cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 85. Required database configuration fields for Oracle

Field	Action needed
Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters: • `User name` Enter the Common Event Infrastructure bus messaging engine user name. • `Password` Enter a password to authenticate with the Common Event Infrastructure bus messaging engine. • `Confirm password` Confirm the password by reentering it.
SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters: • `User name` Enter the SCA application bus messaging engine user name. • `Password` Enter a password to authenticate with the SCA application bus messaging engine. • `Confirm password` Confirm the password by reentering it.
SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters: • `User name` Enter the SCA system bus messaging engine user name. • `Password` Enter a password to authenticate with the SCA system bus messaging engine. • `Confirm password` Confirm the password by reentering it.
Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters: • `User name` Enter the Process Server bus messaging engine user name. • `Password` Enter a password to authenticate with the Process Server bus messaging engine. • `Confirm password` Confirm the password by reentering it.

Table 85. Required database configuration fields for Oracle (continued)

Field	Action needed

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Click Next to go to the Profile Summary page.

10. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   • **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.

   • **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

   You have completed the steps to create the profile with default configuration settings.

   The remaining steps in this topic are for the **Advanced profile creation**.

11. In the Optional Application Deployment page, select the applications you want to deploy to the profile environment.

   Deploy the Sample applications
   Installs the IBM Business Process Manager and WebSphere Application Server sample applications. The sample applications are not recommended for deployment to production environments.

   Deploy the administrative console (recommended)
   Installs a web-based administrative console that manages the server.

   Deploy the default application
   Installs the default application that contains the Snoop, Hello, and HitCount Servlets.

12. In the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value.

      Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name. If you elect not to use the default name, see Naming considerations for profiles, nodes, servers, hosts, and cells for information about issues you must consider when naming the profile, such as restrictions on the length of the directory name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse. . .** button to go to the profile directory.

The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is dependent on platform. The following examples show the platform differences and *profile_name* is the name you specify:

- Linux   UNIX   `install_root/profiles/profile_name`
- Windows   `install_root\profiles\profile_name`

An error message is displayed if any of the following issues occur:
- The *profile_name* you specify is not unique.
- The directory you specify is not empty.
- Your user ID does not have sufficient permissions for the directory.
- There is not sufficient space to create the profile.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile.

Note: This check box is shown only if you have an existing profile on your system.

When a profile is made to be the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies. See Profile commands in a multiprofile environment for more information.

d. From the **Server runtime performance tuning setting** pull-down list, select a performance tuning level appropriate for the profile you are creating.

e. Click **Next**.

Note: If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

13. In the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value.

Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.

- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next** to display the Administrative Security page.

14. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

Click **Next**.

15. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

Perform the following actions:

- To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
- To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

16. In the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower® signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify.

    An imported certificate is added to the `key.p12` file or the `root-key.p12` file.

    If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

17. From the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**.

    The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

- **Linux** **UNIX** *profile_root*/**properties/portdef.props**

- **Windows** *profile_root***properties\\portdef.props**

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see the topic Updating ports in an existing profile in the WebSphere Application Server Network Deployment information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

The next step depends on your platform and whether you are installing as a root (Administrator) or nonroot user.

If you are installing	Next step
On a Linux or Windows platform, *and have root or Administrator group privileges*	The Linux or Windows Service Definition page is displayed. Proceed to step 18.
On any other platform or as a nonroot user on a Linux or Windows platform	The Web Server Definition page is displayed. Proceed to step 19 on page 203.

18. In the Service Definition page, indicate whether or not to use a Windows service or Linux service to run IBM Business Process Manager

    Windows The Windows Service Definition page displays for the Windows platform only when the ID that installs the Windows service has the Administrator group privilege. If the profile is configured as a Windows service, the product starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Windows service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is Manual). The user ID must not have spaces in its name, it must belong to the Administrator group, and it must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 considerations when running profiles as Windows services

    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

    Linux The Linux Service Definition page is displayed only if the current operating system is a supported version of Linux and the current user has the appropriate permissions.

    IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Linux service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

By default, IBM Business Process Manager is not selected to run as a Linux service.

To create the service, the user who runs the Profile Management Tool must be the root user. If you run the Profile Management Tool with a non-root user ID, the Linux Service Definition page is not displayed, and no service is created.

You must specify a user name under which the service runs.

To delete a Linux service, the user must be the root user or have proper privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

Click **Next** to continue

19. To include a Web server definition in the profile now, perform the following steps:
    a. Select the **Create a Web server definition** check box.
    b. Specify the Web server characteristics on the page, and click **Next**
    c. Specify the Web server characteristics on Part 2 of the page.

       If you use a Web server to route requests to IBM Business Process Manager, you need to include a Web server definition. You can include the definition now, or define the Web server to IBM Business Process Manager later. If you define the Web server definition during the creation of this profile, you can install the Web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the Web Server Definition pages. If you define the Web server to IBM Business Process Manager after you create this profile, you must define the Web server in a separate profile.
    d. Click **Next**.

20. On the Business Space Configuration page, leave the **Configure Business Space** check box selected to set up Business Space, an integrated user experience for application users across the IBM business process management portfolio. If you want to configure IBM Forms Server to work with Human Task Management widgets in Business Space, select the **Configure IBM Forms Server** check box and enter the HTTP location of the IBM Forms Server translator and IBM Forms Server installation root. Then click **Next**.

21. Select whether to configure a Business Rules Manager for the installation.

22. Configure the databases using a design file.
    a. Select **Use a database design file** .
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.
    e. Click **Next**.

23. If you chose not to configure the databases using a design file, specify the database details on the database configuration panels. For details, see the following steps:
    a. 8 on page 192
    b. 9 on page 193

24. In the Business Process Choreographer Configuration, select whether to create a sample Business Process Choreographer configuration.

25. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

- **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
- **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

26. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 572.

Proceed to First Steps Console and start the Process Server stand-alone profile you have just created.

Related information:

Creating database design files by using the database design tool

Creating Process Center stand-alone profiles using the Profile Management Tool:

Use the Profile Management Tool to create Process Center stand-alone profiles.

Federating Process Center stand-alone profiles is not supported in version 7.5.

- Review Prerequisites for creating or augmenting profiles.

- `Solaris` When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root/*.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

Use the procedure in this task topic if you are:

- Creating a *Process Center* stand-alone profile for IBM Business Process Manager Advanced .

The steps describe both **Advanced profile creation** and **Typical profile creation**.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - `Linux` `UNIX` *install_root*/**bin/ProfileManagement/pmt.sh**

   - `Windows` *install_root***bin\ProfileManagement\pmt.bat**

   The Welcome page displays.

   See Starting the Profile Management Tool for other methods of starting this tool.

2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.

3. In the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the configuration for which you are creating the profile and expand the section. .

   For example, if you are creating profiles for IBM BPM Advanced, select the option for **IBM BPM Advanced, Process Server Stand-alone** profile and click **Next**. If you are creating profiles for IBM BPM Standard, select the option for **IBM BPM Standard, Process Server Stand-alone** profile and click **Next**. If you are creating profiles for IBM BPM Express, select the option for **IBM BPM Express, Process Server Stand-alone** profile and click **Next**

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.
5. From the Profile Creation Options page, decide whether to create the stand-alone profile using the **Advanced** or **Typical** option.

Table 86. Selecting the creation option for your stand-alone profile

Select	When you want to . . .

Advanced profile creation	• Specify a database design file to be used for the database configuration.
	• Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
	• Deploy the administrative console.
	• Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets).
	• Create a web server definition.
	• Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
	• Configure Business Space powered by WebSphere.
	
	  Note: Business Space powered by WebSphere is configured in the common database.
	• Configure Business Rules Manager and create a Business Process Choreographer sample configuration.
	  Important: When you create a stand-alone profile for use with a DB2 database, a sample Business Process Choreographer configuration is created by default. It uses its own schema within the common database (CMNDB) and the schema name is always BPEDB. If these conditions are too restrictive, disable the Business Process Choreographer configuration during profile creation and configure Business Process Choreographer after you create the profile. During profile creation, Business Process Choreographer cannot be configured to use a database other than DB2. To use an Oracle or a SQL Server database, configure Business Process Choreographer after you create the profile.

Table 86. Selecting the creation option for your stand-alone profile (continued)

Select	When you want to . . .
Typical profile creation	Let the Profile Management Tool • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for the CommonDB, the Process Server database and the Performance Data Warehouse database.

     If you selected **Typical profile creation**, go to step 6.

     If you selected **Advanced profile creation** , go to step 8.

6. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

   Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

   Click **Next**.

7. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   • **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   • **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

8. In the Optional Application Deployment page, select whether to deploy the administrative console and the default application.

Deploy the Sample applications

Installs the IBM Business Process Manager and WebSphere Application Server sample applications. The sample applications are not recommended for deployment to production environments.

Deploy the administrative console (recommended)

Installs a web-based administrative console that manages the server.

Deploy the default application

Installs the default application that contains the Snoop, Hello, and HitCount Servlets.

Click **Next** to display the Profile Name and Location page.

9. In the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value.

      Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name. If you elect not to use the default name, see Naming considerations for profiles, nodes, servers, hosts, and cells for information about issues you must consider when naming the profile, such as restrictions on the length of the directory name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse. . .** button to go to the profile directory.

      The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is dependent on platform. The following examples show the platform differences and *profile_name* is the name you specify:

      - `Linux` `UNIX`   *install_root*/profiles/*profile_name*
      - `Windows` *install_root*\profiles*profile_name*

      An error message is displayed if any of the following issues occur:
      - The *profile_name* you specify is not unique.
      - The directory you specify is not empty.
      - Your user ID does not have sufficient permissions for the directory.
      - There is not sufficient space to create the profile.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile.

      Note: This check box is shown only if you have an existing profile on your system.

      When a profile is made to be the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies. See Profile commands in a multiprofile environment for more information.

   d. From the **Server runtime performance tuning setting** pull-down list, select a performance tuning level appropriate for the profile you are creating.

   e. Click **Next**.

      Note: If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. In the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value.

Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.

- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next** to display the Administrative Security page.

11. See 6 on page 206 for details.
12. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    Perform the following actions:

    - To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
    - To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. In the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify.

    An imported certificate is added to the `key.p12` file or the `root-key.p12` file.

If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. From the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**.

    The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    - Linux   UNIX   *profile_root*/**properties/portdef.props**

    - Windows   *profile_root***properties\\portdef.props**

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see the topic Updating ports in an existing profile in the WebSphere Application Server Network Deployment information center. Run the **updatePorts.ant** file through the `ws_ant` script detailed in this topic.

    The next step depends on your platform and whether you are installing as a root (Administrator) or nonroot user.

If you are installing	Next step
On a Linux or Windows platform, *and have root or Administrator group privileges*	The Linux or Windows Service Definition page is displayed. Proceed to step 15.
On any other platform or as a nonroot user on a Linux or Windows platform	The Web Server Definition page is displayed. Proceed to step 16 on page 210.

15. In the Service Definition page, indicate whether or not to use a Windows service or Linux service to run IBM Business Process Manager

    Windows   The Windows Service Definition page displays for the Windows platform only when the ID that installs the Windows service has the Administrator group privilege. If the profile is configured as a Windows service, the product starts Windows services for processes started by the `startServer` or `startManager` commands. For example, if you configure a server or deployment manager as a Windows service and issue the `startServer` or `startManager` commands, the `wasservice` command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, it must belong to the Administrator group, and it must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 considerations when running profiles as Windows services

    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service

that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

Linux The Linux Service Definition page is displayed only if the current operating system is a supported version of Linux and the current user has the appropriate permissions.

IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Linux service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

By default, IBM Business Process Manager is not selected to run as a Linux service.

To create the service, the user who runs the Profile Management Tool must be the root user. If you run the Profile Management Tool with a non-root user ID, the Linux Service Definition page is not displayed, and no service is created.

You must specify a user name under which the service runs.

To delete a Linux service, the user must be the root user or have proper privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

16. To include a Web server definition in the profile now, perform the following steps:

    a. Select the **Create a Web server definition** check box.

    b. Specify the Web server characteristics on the page, and click **Next**

    c. Specify the Web server characteristics on Part 2 of the page.

       If you use a Web server to route requests to IBM Business Process Manager, you need to include a Web server definition. You can include the definition now, or define the Web server to IBM Business Process Manager later. If you define the Web server definition during the creation of this profile, you can install the Web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the Web Server Definition pages. If you define the Web server to IBM Business Process Manager after you create this profile, you must define the Web server in a separate profile.

    d. Click **Next**.

17. Configure the databases using a design file.

    a. Select **Use a database design file** .

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

    e. Click **Next**.

    If you select **Use a database design file**, the next two steps (Database Configuration - Part 1, and Database Configuration Part 2) will be skipped.

18. On the Database Configuration - Part 1 page, perform the following actions:

    • From the **Select a database product** drop-down, select the database product to be used by the profile.

    • Select whether to **Create a new local database** or to **Use an existing local or remote database**.

       If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

If the database product you are using with the software already exists, select **Use an existing local or remote database** .

- In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
- In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
- In the **Common database name** field, enter a name for the common database or accept the **CMNDB** default value.
- Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

  If you do not select the checkbox, the scripts are output to the default directory.
- Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

Click **Next** to display the Database Configuration - Part 2 page.

The information on the Database Configuration - Part 2 page varies depending on the value specified in the **Select a database product** menu on the Database Configuration - Part 1 page.

19. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

    In the Database Configuration - Part 2 page, complete the configuration of the database you selected.

    Configuration parameters for all databases are listed in the sub-steps that follow:

    - For a listing of DB2 parameter definitions, click here
    - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
    - For a listing of Microsoft SQL Server parameter definitions, click here
    - For a listing of Oracle parameter definitions, click here

    a. Set values for the DB2 Database

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 87. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

b. Set values for the DB2 Universal Database for z/OS

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 88. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: ${WAS_INSTALL_ROOT}/jdbcdrivers/DB2
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of 446 or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 89. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**

Common database	For the Common database, enter values for the following parameters:
	
	• `User name`
	  Enter the Common database user name.
	• `Password`
	  Enter a password to authenticate with the Common database.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 89. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	  Confirm the password by reentering it.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	  Confirm the password by reentering it.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 90. Required database configuration fields for Microsoft SQL Server

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the Common Event Infrastructure bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	• **Confirm password**
	  Confirm the password by reentering it.

Table 90. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the SCA application bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the SCA application bus messaging engine.
	• **Confirm password**
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the SCA system bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• **Confirm password**
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the Process Server bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• **Confirm password**
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the Performance Data Warehouse bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• **Confirm password**
	  Confirm the password by reentering it.

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 91. Required database configuration fields for Oracle

Field	Action needed

Common database	For the Common database, enter values for the following parameters:
	• **User name**
	  Enter the Common database user name.
	• **Password**
	  Enter a password to authenticate with the Common database.
	• **Confirm password**
	  Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	  Confirm the password by reentering it.
	Note: Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	  Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 92. Required database configuration fields for Oracle

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Common Event Infrastructure bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA application bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA application bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 92. Required database configuration fields for Oracle (continued)

Field	Action needed
Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters: • `User name` Enter the Performance Data Warehouse bus messaging engine user name. • `Password` Enter a password to authenticate with the Performance Data Warehouse bus messaging engine. • `Confirm password` Confirm the password by reentering it.

20. On the Business Space Configuration page, leave the **Configure Business Space** check box selected to set up Business Space, an integrated user experience for application users across the IBM business process management portfolio. If you want to configure IBM Forms Server to work with Human Task Management widgets in Business Space, select the **Configure IBM Forms Server** check box and enter the HTTP location of the IBM Forms Server translator and IBM Forms Server installation root. Then click **Next**.

21. Select whether to configure a Business Rules Manager for the installation.

    Business Rules Manager is a Web application that customizes the business rules templates for your business application needs.

    Click **Next**.

22. In the Business Process Choreographer Configuration, select whether to create a sample Business Process Choreographer configuration.

23. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:
    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

24. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 572.

Proceed to First Steps Console and start the server for the Process Center stand-alone profile you created.

Related information:

Creating database design files by using the database design tool

Creating database design files by using the database design tool

Creating network deployment profiles

After you perform a Custom installation, you can use the Profile Management Tool or the `manageprofiles` command-line utility to create the deployment manager and custom profiles for a network deployment environment.

Creating Process Server deployment manager profiles using the Profile Management Tool:

You can use the Profile Management Tool to create the Process Server deployment manager profiles for your network deployment configuration.

- Review Prerequisites for creating or augmenting profiles.

- Solaris When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/ `.Xdefaults` file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

Use the procedure in this task topic if you are:

- Creating a *Process Server* deployment manager profile for an IBM Business Process Manager Advanced network deployment configuration

Note: Creating the deployment manager profile is *one step in a multistep process* for creating a network deployment configuration.

A network deployment environment configuration is any *non-standalone configuration* of IBM Business Process Manager Advanced.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - Linux UNIX *install_root*/**bin/ProfileManagement/pmt.sh**

   - Windows *install_root***bin\\ProfileManagement\\pmt.bat**

   The Welcome page displays.

   See Starting the Profile Management Tool for other methods of starting this tool.

2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.

3. In the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Advanced configuration for which you are creating the deployment manager profile and expand the section. Select the option for IBM BPM Advanced, Process Server deployment manager profile and click **Next**.

Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

The Profile Creation Options page displays.

5. From the Profile Creation Options page, decide whether to create the deployment manager profile using the **Advanced** or **Typical** option.

Table 93. Selecting the profile creation option for your deployment manager profile

Select	When you want to . . .
Advanced profile creation	• Specify a database design file to be used for the database configuration. • Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • Create a web server definition. • Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services. • Configure Business Space powered by WebSphere. **Note:** Business Space powered by WebSphere is configured in the common database. • Configure Business Rules Manager and create a Business Process Choreographer sample configuration.
Typical profile creation	Let the Profile Management Tool • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of WebAS (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of WebAS (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for the CommonDB, the Process Server database and the Performance Data Warehouse database.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 10 on page 223.

6. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

Click **Next**.

7. On the Database Configuration - Part 1 page, perform the following actions:

• From the **Select a database product** drop-down, select the database product to be used by the profile.

- Select whether to **Create a new local database** or to **Use an existing local or remote database**.

  If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

  If the database product you are using with the software already exists, select **Use an existing local or remote database** .
- In the **Common database name** field, enter a name for the common database or accept the default **CMNDB** value.
- Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

  If you do not select the checkbox, the scripts are output to the default directory.
- Select the **Skip the database initialization for the Process Server and Performance Data Warehouse** checkbox if you do not want the profile creation process to initialize the databases for Process Server and Performance Data Warehouse.
- Select the **Run database scripts to create the database tables** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

  Note: If you select **Run database scripts to create the database tables** and you are configuring Oracle or DB2 for z/OS, the Profile Management Tool needs access to the database system to create the tables. If the Profile Management Tool cannot connect to the database system to create the tables, a database validation error is thrown.
8. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**

   The information on the Database Configuration - Part 2 page varies depending on the value specified in the **Select a database product** menu on the Database Configuration - Part 1 page.

   Configuration parameters for all databases are listed in the sub-steps that follow:
   - For a listing of DB2 parameter definitions, click here
   - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
   - For a listing of Microsoft SQL Server parameter definitions, click here
   - For a listing of Oracle parameter definitions, click here
   a. Set values for the DB2 Database

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 94. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer.
User name to authenticate with the database	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.

Table 94. Required database configuration fields for DB2 Database (continued)

Field	Action needed
Location (directory) of JDBC driver classpath files	Accept the default value of *install_root*/db2/SQLLIB/ java on Linux and UNIX platforms, or *install_root*\db2\SQLLIB\java on Windows platforms, or browse to the location on your system that contains the following files: • db2jcc.jar • db2jcc_license_cu.jar *or* db2jcc_license_cisuz.jar An error message displays if the files cannot be found at the specified location. Click **Browse** to go to the location of the classpath files if they are not found in default location.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.
Schema name	Enter the schema name for the database

b. Set values for the DB2 Universal Database for z/OS

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 95. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name to authenticate with the database	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Location (directory) of JDBC driver classpath files	Enter the location on your system that contains the following files: • db2jcc.jar • db2jcc_license_cisuz.jar An error message is displayed if the files cannot be found at the specified location.
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of 446 or enter the correct server port number.
Schema name	Enter the database schema name for the database.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 96. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**

Common database	For the Common database, enter values for the following parameters:
	• `User name`
	  Enter the Common database user name.
	• `Password`
	  Enter a password to authenticate with the Common database.
	• `Confirm password`
	  Confirm the password by reentering it.

Location (directory) of JDBC driver classpath files	Enter the location on your system that contains the specific jar: • DataDirect Connect JDBC 4.0: directory containing `sqlserver.jar` • Microsoft SQL Server JDBC 1.2: directory containing `sqljdbc.jar` • Microsoft SQL Server JDBC 2.0: directory containing `sqljdbc4.jar`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.

    d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 97. Required database configuration fields for Oracle

Field	Action needed

Common database	For the Common database, enter values for the following parameters:
	• `User name`
	  Enter the Common database user name.
	• `Password`
	  Enter a password to authenticate with the Common database.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 97. Required database configuration fields for Oracle (continued)

Field	Action needed
Location (directory) of JDBC driver classpath files	Enter or browse for the location on your system that contains the file `ojdbc6.jar`. You must install the `ojdbc6.jar` driver to access the Oracle database. **Important:** Important: Oracle 10g does not contain the `ojdbc6.jar` driver. You can download it from the Oracle Web site. An error message is displayed if the files cannot be found at the specified location.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory of database server location	Enter or browse for the database server installation. Required when the **Run database scripts to create the database tables** option is selected in the previous screen .

9. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

10. In the Optional Application Deployment page, select whether to deploy the administrative console

    Click **Next** to display the Profile Name and Location page.

11. In the Profile Name and Location page, perform the following steps:

    a. In the **Profile name** field, specify a unique name or accept the default value.

       Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name. If you elect not to use the default name, see Profile commands in a multiprofile environment for information about issues you must consider when naming the profile, such as restrictions on the length of the directory name.

    b. In the **Profile directory** field, enter the directory for the profile or use the **Browse. . .** button to go to the profile directory.

       The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is dependent on platform:

       - Linux   UNIX `install_root/profiles/profile_name`
       - Windows `install_root\profiles\profile_name`

       where *profile_name* is the name you specified. An error message is displayed if:

       - The *profile_name* you specify is not unique.

- The directory you specify is not empty.
- Your user ID does not have sufficient permissions for the directory.
- There is not sufficient space to create the profile.

  c. Optional: Select the **Make this profile the default** check box if you wish to make the profile you are creating the default profile.

  When a profile is made to be the default profile, commands work automatically with it.

  Note: This check box appears only if you have an existing profile on your system.

  The first profile that you create on a workstation is the default profile.

  The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies. See Profile commands in a multiprofile environment for more information.

12. In the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value.

      Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.

    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next** to display the Administrative Security page.

13. See 6 on page 219 for details.

14. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    Perform the following actions:

    - To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.

    - To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

15. In the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify.

An imported certificate is added to the `key.p12` file or the `root-key.p12` file.

If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

16. From the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**.

    The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    - `Linux` `UNIX` *profile_root*/**properties/portdef.props**

    - `Windows` *profile_root***properties\\portdef.props**

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see the topic Updating ports in an existing profile in the WebSphere Application Server Network Deployment information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

    The next step depends on your platform and whether you are installing as a root (Administrator) or nonroot user.

If you are installing	Next step
On a Linux or Windows platform, *and have root or Administrator group privileges*	The Linux or Windows Service Definition page is displayed. Proceed to step 17.
On any other platform or as a nonroot user on a Linux or Windows platform	The Database Design page is displayed. Proceed to step 18 on page 226.

17. In the Service Definition page, indicate whether or not to use a Windows service or Linux service to run IBM Business Process Manager

`Windows` The Windows Service Definition page displays for the Windows platform only when the ID that installs the Windows service has the Administrator group privilege. If the profile is configured as a Windows service, the product starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Windows service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, it must belong to the Administrator group, and it must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 considerations when running profiles as Windows services

Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

`Linux` The Linux Service Definition page is displayed only if the current operating system is a supported version of Linux and the current user has the appropriate permissions.

IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Linux service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

By default, IBM Business Process Manager is not selected to run as a Linux service.

To create the service, the user who runs the Profile Management Tool must be the root user. If you run the Profile Management Tool with a non-root user ID, the Linux Service Definition page is not displayed, and no service is created.

You must specify a user name under which the service runs.

To delete a Linux service, the user must be the root user or have proper privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

18. Configure the databases using a design file.

    a. Select **Use a database design file** .

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

    e. Click **Next**.

If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

19. Configure the Database. See 7 on page 219 and 8 on page 220 for details.
20. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

21. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 572.

You have created the Process Server deployment manager profile for the IBM Business Process Manager Advanced network deployment configuration.

Build the clusters and configure the components on the clusters. The components available for configuration in a network deployment environment vary based on the IBM Business Process Manager Advanced (Advanced or Standard) installed on your system.

You have options on how to build the clusters and configure the IBM Business Process Manager Advanced components for your network deployment configuration.

You can

Creating Process Server custom profiles (managed nodes) using the Profile Management Tool:

You can use the Profile Management Tool to create and configure Process Server custom profiles (managed nodes) for your network deployment configuration.

You have created the Process Server deployment manager profile and you have run the database configuration scripts to create Common database and tables.You have created the deployment manager profile and you have run the database configuration scripts to create Common database and tables.

To use the node (custom profile), you must federate the node to an existing deployment manager. If you want to federate the node during the creation process, the deployment manager must be running.

Tip: Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create profiles, as described in Configuring the software using command-line utilities and wsadmin.

Use the procedure in this task topic if you are:

- Creating a *Process Server* custom profile (managed nodes) for your IBM Business Process Manager Advanced network deployment configuration

Note: Information that applies to process center only or to process server only, is so noted in this procedure.

This topic describes both the **Typical Advanced** method for creating custom profiles (managed nodes).

You can choose to federate the node (custom profile) to an existing deployment manager during the creation process, or federate the node later using the **addNode** command. If you decide to federate the node during the creation process, the tool sets the Common database configuration to the same database as the deployment manager. If you decide not to federate the node, the database configuration is left unconfigured.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - **Linux** **UNIX** *install_root*/**bin/ProfileManagement/pmt.sh**

   - **Windows** *install_root***bin\ProfileManagement\pmt.bat**

   The Welcome page displays.

2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.

3. In the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager configuration (Advanced or Standard) for which you are creating the custom profile and expand the section. Select the option for Custom profile and click **Next**.

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.

5. On the Profile Creation Options page, decide whether to create the custom profile using the **Typical profile creation** or **Advanced profile creation** option.

Table 98. Selecting the profile creation option for your custom profile

Select	When you want to . . .
Typical profile creation	Let the Profile Management Tool
	• Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell.
	• Install the administrative console.
	• Create a personal security certificate for the profile.
	The certificate has a personal key and private key, each with a default value of WebAS (you must change this password). The expiration period is one year.
	• Create a root signing security certificate for signing other certificates.
	The certificate has a personal key and private key, each with a default value of WebAS (you must change this password). The expiration period is 15 years.
	• Create a system service to run the server.
	Applicable only when your operating system and the privileges of your user account permit.
	• Select any of the supported database products and the database configuration is set for the CommonDB, the Process Server database and the Performance Data Warehouse database.

Table 98. Selecting the profile creation option for your custom profile (continued)

Select	When you want to . . .
Advanced profile creation	• Specify a database design file to be used for the database configuration. • Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • Create a web server definition. • Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services. • Configure Business Space powered by WebSphere. **Note:** Business Space powered by WebSphere is configured in the common database. • Configure Business Rules Manager and create a Business Process Choreographer sample configuration.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 9 on page 230.

6. In the **Federation** page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation. If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

    Important:

    Check **Federate this node later** if any one of the following situations is true:

    • You plan to use this custom node as a migration target.

    • Another profile is being federated. (Node federation must be serialized.)

    • The deployment manager is not running or you are not sure if it is running.

    • The deployment manager has the SOAP connector disabled

    • The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.

    • The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.

    • The deployment manager does not have a JMX administrative port enabled.

    • The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

    Processing associated with federating the node as part of custom profile creation:

    • The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

    • If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.

    Click **Next** to continue.

7. On the Database Configuration page, select the database used by the deployment manager and specify the location of the JDBC driver classpath files.

8. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.
   You have completed the steps to create the profile with default configuration settings.

   The remaining steps in this topic are for the **Advanced profile creation**.

9. In the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value.

      Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name. If you elect not to use the default name, see Profile commands in a multiprofile environment for information about issues you must consider when naming the profile, such as restrictions on the length of the directory name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse. . .** button to go to the profile directory.

      The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is dependent on platform:

      - `Linux`   `UNIX`   `install_root/profiles/profile_name`
      - `Windows`   `install_root\profiles\profile_name`

      where *profile_name* is the name you specified. An error message is displayed if:
      - The *profile_name* you specify is not unique.
      - The directory you specify is not empty.
      - Your user ID does not have sufficient permissions for the directory.
      - There is not sufficient space to create the profile.

   c. Optional: Select the **Make this profile the default** check box if you wish to make the profile you are creating the default profile.

      When a profile is made to be the default profile, commands work automatically with it.

      Note: This check box appears only if you have an existing profile on your system.

      The first profile that you create on a workstation is the default profile.

      The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies. See Profile commands in a multiprofile environment for more information.

   d. Click **Next**.

Note: If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. In the Node and Host Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value.

      Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.

    - In the **Host name** field, enter a name for the host or accept the default value.

    Click **Next** to display the Federation page.

11. In the **Federation** page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation. If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

    Important:

    Check **Federate this node later** if any one of the following situations is true:

    - You plan to use this custom node as a migration target.
    - Another profile is being federated. (Node federation must be serialized.)
    - The deployment manager is not running or you are not sure if it is running.
    - The deployment manager has the SOAP connector disabled
    - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
    - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
    - The deployment manager does not have a JMX administrative port enabled.
    - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

    Processing associated with federating the node as part of custom profile creation:

    - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
    - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.

    Click **Next** to continue.

12. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    Perform the following actions:

    - To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.

    - To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

- In the **Password** field, enter the password for the certificate
- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. In the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify.

An imported certificate is added to the `key.p12` file or the `root-key.p12` file.

If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. In the Database Configuration page, select a database product and the location of the JDBC drivers.

15. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

The progress of the configuration displays on the Profile Configuration Progress window.

When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

- **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
- **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

16. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

17. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 572.

You have created your custom profile.

The node within the profile is empty until you federate the node to a deployment manager, then use the administrative console to customize it.

In a network deployment environment, you must create and configure databases, create other custom profiles and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

Federating custom nodes to a deployment manager:

You can use the **addNode** command to federate a custom node into a deployment manager cell. The following instructions guide you through the process of federating and deploying custom nodes.

Before using this procedure, ensure that the following prerequisites are met:

- You have installed IBM Business Process Manager and created an IBM Business Process Manager or WebSphere ESB deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:
  - `Linux` `UNIX` *profile_root*/bin/startManager.sh
  - `Windows` *profile_root*\bin\startManager.bat
- The deployment manager has been augmented into an IBM Business Process Manager or WebSphere ESB deployment manager.IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

Federate a custom node so that it can be managed by a deployment manager. Use the **addNode** command to federate a custom profile into a deployment manager cell.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to one of the following directories (from a command line), depending on platform (where *profile_root* represents the installation location of the custom profile):
   - `Linux` `UNIX` *profile_root*/bin
   - `Windows` *profile_root*\bin

2. Issue the **addNode** command.

   Issue one of the following commands from the command line if security is not enabled:

   - `Linux` `UNIX` ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*
   - `Windows` addNode.bat *deployment_manager_host deployment_manager_SOAP_port*

   Issue one of the following commands from the command line if security is enabled:

   - `Linux` `UNIX` ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port* -username *userID_for_authentication* -password *password_for_authentication*
   - `Windows` addNode.bat *deployment_manager_host deployment_manager_SOAP_port* -username *userID_for_authentication* -password *password_for_authentication*

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

   ```
   ADMU0003I: Node DMNDID2Node03 has been successfully federated.
   ```

The custom profile is federated into the deployment manager. For more information about the **addNode** command and its parameters, see the topic Using wsadmin scripting to run the addNode command in the WebSphere Application Server Network Deployment information center.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can use the Profile Management Tool to create the Process Center deployment manager profiles for your network deployment configuration.

- Review Prerequisites for creating or augmenting profiles.

- `Solaris` When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

  ```
  Eclipse*spacing:0
  Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
  ```

  After adding the lines, run the following command before starting the Profile Management Tool:

  ```
  xrdb -load user_home/.Xdefaults
  ```

Use the procedure in this task topic if you are:

- Creating a *process center* deployment manager profile for an IBM Business Process Manager Advanced network deployment configuration

Note: Creating the deployment manager profile is *one step in a multistep process* for creating a network deployment configuration.

A network deployment environment configuration is any *non-standalone configuration* of IBM Business Process Manager Advanced.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - `Linux` `UNIX` *install_root*/**bin/ProfileManagement/pmt.sh**
   - `Windows` *install_root***bin\ProfileManagement\pmt.bat**

   The Welcome page displays.

   See Starting the Profile Management Tool for other methods of starting this tool.

2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.

3. In the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Advanced configuration for which you are creating the deployment manager profile and expand the section. Select the option for IBM BPM Advanced, Process Center deployment manager profile and click **Next**.

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.

5. From the Profile Creation Options page, decide whether to create the deployment manager profile using the **Advanced** or **Typical** option.

Table 99. Selecting the profile creation option for your deployment manager profile

Select	When you want to . . .
Advanced profile creation	• Specify a database design file to be used for the database configuration. • Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • Create a web server definition. • Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services. • Configure Business Space powered by WebSphere. **Note:** Business Space powered by WebSphere is configured in the common database. • Configure Business Rules Manager and create a Business Process Choreographer sample configuration.
Typical profile creation	Let the Profile Management Tool • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of WebAS (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of WebAS (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for the CommonDB, the Process Server database and the Performance Data Warehouse database.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 10 on page 239.

6. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

   Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

   Click **Next**.

7. On the Database Configuration page, perform the following actions:

   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the SQL scripts used to create the database tables are written.

     If you do not select the checkbox, the scripts are output to the default directory.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .
   - In the **Common database name** field, enter a name for the common database or accept the default **CMNDB** value.
   - Select the **Run database scripts to create the database tables** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

     Note: If you select **Run database scripts to create the database tables** and you are configuring Oracle or DB2 for z/OS, the Profile Management Tool needs access to the database system to create the tables. If the Profile Management Tool cannot connect to the database system to create the tables, a database validation error is thrown.

8. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**

   The information on the Database Configuration - Part 2 page varies depending on the value specified in the **Select a database product** menu on the Database Configuration - Part 1 page.

   Configuration parameters for all databases are listed in the sub-steps that follow:

   - For a listing of DB2 parameter definitions, click here
   - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
   - For a listing of Microsoft SQL Server parameter definitions, click here
   - For a listing of Oracle parameter definitions, click here

   a. Set values for the DB2 Database

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 100. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer.
User name to authenticate with the database	Enter the user name to authenticate with the database.

Table 100. Required database configuration fields for DB2 Database (continued)

Field	Action needed
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Location (directory) of JDBC driver classpath files	Accept the default value of *install_root*/jdbcdrivers/DB2 on Linux and UNIX platforms, or *install_root*\jdbcdrivers\DB2 on Windows platforms, or browse to the location on your system that contains the following files: • db2jcc.jar or db2jcc4.jar • db2jcc_license_cu.jar or db2jcc_license_cisuz.jar An error message displays if the files cannot be found at the specified location. Click **Browse** to go to the location of the classpath files if they are not found in default location.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.
Schema name	Enter the schema name for the database

b. Set values for the DB2 Universal Database for z/OS

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 101. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name to authenticate with the database	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Location (directory) of JDBC driver classpath files	Enter the location on your system that contains the following files: • db2jcc.jar • db2jcc_license_cisuz.jar An error message is displayed if the files cannot be found at the specified location.
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of 446 or enter the correct server port number.
Schema name	Enter the database schema name for the database.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 102. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
Common database	For the Common database, enter values for the following parameters: • `User name` Enter the Common database user name. • `Password` Enter a password to authenticate with the Common database. • `Confirm password` Confirm the password by reentering it.
Location (directory) of JDBC driver classpath files	Enter the location on your system that contains the specific jar: • DataDirect Connect JDBC 4.0: directory containing `sqlserver.jar` • Microsoft SQL Server JDBC 1.2: directory containing `sqljdbc.jar` • Microsoft SQL Server JDBC 2.0: directory containing `sqljdbc4.jar`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 103. Required database configuration fields for Oracle

Field	Action needed
Common database	For the Common database, enter values for the following parameters: • `User name` Enter the Common database user name. • `Password` Enter a password to authenticate with the Common database. • `Confirm password` Confirm the password by reentering it.

Table 103. Required database configuration fields for Oracle (continued)

Field	Action needed
Location (directory) of JDBC driver classpath files	Enter or browse for the location on your system that contains the file `ojdbc6.jar`. You must install the `ojdbc6.jar` driver to access the Oracle database. **Important:** Important: Oracle 10g does not contain the `ojdbc6.jar` driver. You can download it from the Oracle Web site. An error message is displayed if the files cannot be found at the specified location.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory of database server location	Enter or browse for the database server installation. Required when the **Run database scripts to create the database tables** option is selected in the previous screen .

9. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

10. In the Optional Application Deployment page, select whether to deploy the administrative console

    Click **Next** to display the Profile Name and Location page.

11. In the Profile Name and Location page, perform the following steps:

    a. In the **Profile name** field, specify a unique name or accept the default value.

       Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name. If you elect not to use the default name, see Profile commands in a multiprofile environment for information about issues you must consider when naming the profile, such as restrictions on the length of the directory name.

    b. In the **Profile directory** field, enter the directory for the profile or use the **Browse. . .** button to go to the profile directory.

       The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is dependent on platform:

       - Linux UNIX `install_root/profiles/profile_name`

       - Windows `install_root\profiles\profile_name`

       where *profile_name* is the name you specified. An error message is displayed if:

       - The *profile_name* you specify is not unique.

- The directory you specify is not empty.
- Your user ID does not have sufficient permissions for the directory.
- There is not sufficient space to create the profile.

c. Optional: Select the **Make this profile the default** check box if you wish to make the profile you are creating the default profile.

When a profile is made to be the default profile, commands work automatically with it.

Note: This check box appears only if you have an existing profile on your system.

The first profile that you create on a workstation is the default profile.

The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies. See Profile commands in a multiprofile environment for more information.

12. In the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value.

  Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.

- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next** to display the Administrative Security page.

13. On the Administrative Security page, enter values for the **User name** and **Password** and renter the password in the **Confirm password** field. For information about this page, see 6 on page 236

14. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

Perform the following actions:

- To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.

- To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons and provide the following information:

  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

15. In the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain

keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify.

An imported certificate is added to the `key.p12` file or the `root-key.p12` file.

If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

16. From the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**.

The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:
- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

- Linux UNIX *profile_root*/**properties/portdef.props**

- Windows *profile_root***properties\portdef.props**

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see the topic Updating ports in an existing profile in the WebSphere Application Server Network Deployment information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

The next step depends on your platform and whether you are installing as a root (Administrator) or nonroot user.

Installation type	Next step
On a Linux or Windows platform, *and have root or Administrator group privileges*	The Linux or Windows Service Definition page is displayed. Proceed to step 17 on page 242.
On any other platform or as a nonroot user on a Linux or Windows platform	The Database Design page is displayed. Proceed to step 18 on page 242.

17. In the Service Definition page, indicate whether or not to use a Windows service or Linux service to run IBM Business Process Manager

   `Windows` The Windows Service Definition page displays for the Windows platform only when the ID that installs the Windows service has the Administrator group privilege. If the profile is configured as a Windows service, the product starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Windows service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

   Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, it must belong to the Administrator group, and it must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

   During profile deletion, you can remove the Windows service that is added during profile creation.

   IPv6 considerations when running profiles as Windows services

   Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

   `Linux` The Linux Service Definition page is displayed only if the current operating system is a supported version of Linux and the current user has the appropriate permissions.

   IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Linux service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

   By default, IBM Business Process Manager is not selected to run as a Linux service.

   To create the service, the user who runs the Profile Management Tool must be the root user. If you run the Profile Management Tool with a non-root user ID, the Linux Service Definition page is not displayed, and no service is created.

   You must specify a user name under which the service runs.

   To delete a Linux service, the user must be the root user or have proper privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

18. Configure the databases using a design file.

   a. Select **Use a database design file** .

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

   e. Click **Next**.

   If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the

database configuration. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

19. Configure the Database. See 7 on page 236 and 8 on page 236 for details.

20. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

21. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 572.

You have created the Process Center deployment manager profile.

You can add custom (managed nodes) profiles to be managed by the deployment manager and then build the clusters and configure the components on the clusters.

The components available for configuration in a network deployment environment vary based on the IBM Business Process Manager Advanced (Advanced or Standard) installed on your system.

You have options on how to build the clusters and configure the IBM Business Process Manager Advanced components for your network deployment configuration, as follows:

- Creating a standardized network deployment configuration.
- Creating a customized network deployment configuration.

Creating Process Center custom profiles (managed nodes) using the Profile Management Tool:

You can use the Profile Management Tool to create and configure Process Center custom profiles (managed node) for your network deployment configuration.

- You have created the deployment manager profile for process center.
- You have run the database configuration scripts to create Common database and tables.
- The Deployment manager is running.

Use the procedure in this task topic if you are:

- Creating a *process center* custom profile (managed nodes) for your IBM Business Process Manager Advanced network deployment configuration

Note: Information that applies to process center only or to process server only, is so noted in this procedure.

This topic describes both the **Typical Advanced** method for creating custom profiles (managed nodes).

You can choose to federate the node to an existing deployment manager during the creation process, or federate it later using the **addNode** command. If you decide to federate the profile during the creation process, the tool sets the Common database configuration to the same database as the deployment manager. If you decide not to federate, the database configuration is left unconfigured.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - Linux   UNIX   *install_root*/**bin/ProfileManagement/pmt.sh**
   - Windows   *install_root***bin\ProfileManagement\pmt.bat**

   The Welcome page displays.

2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.

3. In the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager configuration (Advanced or Standard) for which you are creating the custom profile and expand the section. Select the option for Custom profile and click **Next**.

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.

5. From the Profile Creation Options page, decide whether to create the custom profile using the **Advanced** or **Typical** option.

Table 104. Selecting the profile creation option for your custom profile

Select	When you want to . . .
Advanced profile creation	• Specify a database design file to be used for the database configuration. • Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • Create a web server definition. • Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services. • Configure Business Space powered by WebSphere. **Note:** Business Space powered by WebSphere is configured in the common database. • Configure Business Rules Manager and create a Business Process Choreographer sample configuration.

Table 104. Selecting the profile creation option for your custom profile (continued)

Select	When you want to . . .

Typical profile creation	Let the Profile Management Tool
	
	• Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell.
	• Install the administrative console.
	• Create a personal security certificate for the profile.
	
	  The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is one year.
	
	• Create a root signing security certificate for signing other certificates.
	
	  The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is 15 years.
	
	• Create a system service to run the server.
	
	  Applicable only when your operating system and the privileges of your user account permit.
	
	• Select any of the supported database products and the database configuration is set for the CommonDB, the Process Server database and the Performance Data Warehouse database.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 9 on page 246.

6. In the **Federation** page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation. If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port number of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Check **Federate this node later** if any one of the following situations is true:
   • You plan to use this custom node as a migration target.
   • Another profile is being federated. (Node federation must be serialized.)
   • The deployment manager is not running or you are not sure if it is running.
   • The deployment manager has the SOAP connector disabled
   • The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   • The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   • The deployment manager does not have a JMX administrative port enabled.
   • The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   • The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.

   Click **Next** to continue.

7. On the Database Configuration page, select the database used by the deployment manager and specify the location of the JDBC driver classpath files.

8. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

9. In the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value.

      Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name. If you elect not to use the default name, see Profile commands in a multiprofile environment for information about issues you must consider when naming the profile, such as restrictions on the length of the directory name.

   b. In the **Profile** field, enter the directory for the profile or use the **Browse. . .** button to go to the profile directory.

      The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is dependent on platform:

      - � Linux ▪ UNIX ▪ `install_root/profiles/profile_name`
      - ▪ Windows ▪ `install_root\profiles\profile_name`

      where *profile_name* is the name you specified. An error message is displayed if:

      - The *profile_name* you specify is not unique.
      - The directory you specify is not empty.
      - Your user ID does not have sufficient permissions for the directory.
      - There is not sufficient space to create the profile.

   c. Optional: Select the **Make this profile the default** check box if you wish to make the profile you are creating the default profile.

      When a profile is made to be the default profile, commands work automatically with it.

      Note: This check box appears only if you have an existing profile on your system.

      The first profile that you create on a workstation is the default profile.

      The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command

operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies. See Profile commands in a multiprofile environment for more information.

   d. Click **Next**.

   Note: If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. In the Node and Host Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value.

      Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.
    - In the **Host name** field, enter a name for the host or accept the default value.

    Click **Next** to display the Federation page.

11. See 6 on page 245 for details about the Federation page.

12. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    Perform the following actions:
    - To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
    - To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. In the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.

- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify.

An imported certificate is added to the `key.p12` file or the `root-key.p12` file.

If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. In the Database Configuration page, select the database product and set the location of JDBC driver classpath files to match the deployment manager common database configuration.

15. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

The progress of the configuration displays on the Profile Configuration Progress window.

When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:
- **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
- **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

16. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 572.

You have created your IBM Business Process Manager or WebSphere Enterprise Service Bus profile.

The node within the profile is empty until you federate it and use the administrative console to customize it.

In a deployment environment, you must create and configure databases, create other custom profiles and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

Using the manageprofiles command
You can achieve the same configurations that you set up using Profile Management Tool and Deployment Environment by using the manageprofiles command-line utility and wsadmin.

Related concepts:
"Creating stand-alone profiles after a custom installation" on page 189
After you perform a Custom installation, you can use the Profile Management Tool or the `manageprofiles` command-line utility to create a stand-alone server profile.

Creating profiles using the manageprofiles command-line utility:

Learn about creating a profile from the command line using the `manageprofiles` command-line utility and a property file.

To find out more about the **manageprofiles** command-line utility, see manageprofiles command-line utility. Sample response files for the **manageprofiles** command-line utility are located in the *install_root*/BPM/samples/manageprofiles directory.

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:

- You have reviewed the full list of prerequisites for creating or augmenting a profile at Prerequisites for creating or augmenting profiles.
- You have reviewed example profile creation commands in manageprofile examples.
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Security role required for this task: See Granting write permission of files and directories to nonroot users for profile creation.

To use the **manageprofiles** command-line utility to create a profile, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates and under *install_root*/profileTemplates for other products.

   The following templates are available:
   - default.procsvr: for an IBM Business Process Manager stand-alone server profile, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - default.procsvr.adv: for Process Server stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Advanced.
   - dmgr.procsvr: for an IBM Business Process Manager Process Server deployment manager profile, which defines a deployment manager for IBM BPM Standard. A deployment manager provides one administrative interface to a logical group of servers on one or more workstations.
   - dmgr.procsvr.adv: for an IBM Business Process Manager Process Server deployment manager profile, which defines a deployment manager for IBM BPM Advanced. A deployment manager provides one administrative interface to a logical group of servers on one or more workstations.
   - managed.procsvr: for an IBM Business Process Manager custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Standard.

     If you have decided that your solution requires a network deployment configuration, your runtime environment requires one or more managed nodes. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.
   - managed.procsvr.adv: for an IBM Business Process Manager custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Advanced.

     If you have decided that your solution requires a network deployment configuration, your runtime environment requires one or more managed nodes. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating. Also, IBM® Business Process Manager Advanced: Process Server profiles cannot use a WebSphere® Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM Business Process Manager Advanced: Process Server deployment manager.
   - default.esbserver: for a WebSphere Enterprise Service Bus stand-alone server profile, which defines a stand-alone server.
   - dmgr.esbserver: for a WebSphere Enterprise Service Bus deployment manager profile, which defines a deployment manager.

- `managed.esbserver`: for a WebSphere Enterprise Service Bus custom profile, which, when federated to a deployment manager, defines a managed node.
- `default.procctr`: for an IBM Business Process Manager Process Center stand-alone profile, which defines stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
- `default.procctr.adv`: for an IBM Business Process Manager Process Center stand-alone profile, which defines stand-alone servers with capabilities and functionality specific to IBM BPM Advanced.
- `dmgr.procctr` for an IBM Business Process Manager Process Center deployment manager profile, which defines a deployment manager for IBM BPM Standard. A deployment manager provides one administrative interface to a logical group of servers on one or more workstations.
- `dmgr.procctr.adv` for an IBM Business Process Manager Process Center deployment manager profile, which defines a deployment manager for IBM BPM Advanced. A deployment manager provides one administrative interface to a logical group of servers on one or more workstations.
- `managed.procctr` for an IBM Business Process Manager Process Center custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Standard. If you have decided that your solution requires a deployment environment, your runtime environment requires one or more managed nodes.

  A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.
- `managed.procctr.adv` for an IBM Business Process Manager Process Center custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Advanced. If you have decided that your solution requires a deployment environment, your runtime environment requires one or more managed nodes.

  A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.

2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.

3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.

   Note: If you create profiles in IBM Business Process Manager using the **manageprofiles** command-line utility without specifying the **samplesPassword** parameter, the **INSTCONFPARTIALSUCCESS** message is returned. This occurs when the following criteria are met:

   - You installed the samples during IBM Business Process Manager or WebSphere Application Server installation.
   - You use the **manageprofiles** command-line utility to create the profiles.
   - The **samplesPassword** parameter is not specified in the **manageprofiles** command-line utility.

4. Create a response file.

   Sample response files are available under the `install_root/BPM/samples/manageprofiles/` directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail. See Creating a response file using the IBM Business Process Manager samples.

5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux   UNIX **manageprofiles.sh -response** *myResponseFile*

- **Windows** **manageprofiles.bat -response** *myResponseFile*

  The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.
6. Manually configure the SMTP server to enable mail notifications. See Configuring the SMTP server..

You can see that your profile creation completed successfully if you receive a `INSTCONFSUCCESS: Profile creation succeeded.` message, and you can check the following log file:

- **Linux** **UNIX** *install_root*/logs/manageprofiles/*profile_name*_create.log
- **Windows** *install_root*\logs\manageprofiles*profile_name*_create.log

Run the Installation Verification Test (IVT) tool to verify that the profile was created successfully. To do this, run the following command:

- **Linux** **UNIX** **On Linux and UNIX platforms:** *profile_root*/bin/wbi_ivt.sh
- **Windows** **On Windows platforms:** *profile_root*\bin\wbi_ivt.bat

Related concepts:
"JDBC drivers and locations" on page 51
The following table lists both the JDBC drivers that are shipped with your installation and those that are supported by the product.

Creating a response file using the IBM Business Process Manager samples:

IBM Business Process Manager is shipped with sample response files that you can use to create a response file that contains all the details of how you want to configure your system.

Install and configure WebSphere Application Server which is used as a base for your IBM Business Process Manager configuration.

The response file you create is based on one of the following eight sample response files:
- PCStd_StandAlone_MSSQLSERVER_Win.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with a SQL Server database.
- PSStd_StandAlone_DB2_UNIVERSAL_Win.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT_Win.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with a SQL Server database.
- PSAdv_StandAlone_DB2_UNIVERSAL_Win.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PCAdv_Dmgr_ORACLE_Unix.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Dmgr_DB2_DATASERVER_Unix.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE_Unix.response

You can create a response file to use when configuring IBM Business Process Manager Standard Process Center in a custom configuration with an Oracle database.

- PSAdv_Custom_DB2_DATASERVER_Unix.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Server in a custom configuration with a DB2 Dataserver database.

1. From the *Install_root*\BPM\samples\manageprofiles directory, locate and copy the sample response file to your working directory. Choose an appropriate response file to copy based on the profile that you want to create (stand-alone or network, Process Center or Process Server).

2. `UNIX` `Linux` Use the **chmod** command to assign the appropriate permissions to the copy of the response file. For example:

   ```
   chmod 644 myResponseFile
   ```

3. Edit the parameters in the response file as appropriate to your configuration. Make sure the **templatePath** property path matches your specific installation directory.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

4. Save the edited response file.

5. **z/OS only:** Increase the OMVS time limit to allow the product configuration script time to complete. In an MVS console enter the following command: **SETOMVS MAXCPUTIME=86400**.

6. **z/OS only:** Access the z/OS UNIX System Services command shell, then switch to the administrator user ID. For example: **su wsadmin**.

7. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - `Linux` `UNIX` **manageprofiles.sh -response** *myResponseFile*

   - `Windows` **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

8. Start the server.

The following example shows a response file to create a stand-alone Process Center profile on Windows.

```
#*****************************************************************************
# Creates a stand-alone Process Center profile on a Windows platform.
# Call manageprofiles -response PCStd_StandAlone__DB2_UNIVERSAL_Win.response
#*****************************************************************************
create
templatePath=C:/Program Files/IBM/WebSphere/AppServer/profileTemplates/BPM/default.procctr
profileName=ProcCtr01
cellName=SampleCell
nodeName=SampleNode01
serverName=server1
hostName=SampleHost.com
winserviceCheck=false
enableAdminSecurity=true
adminUserName=tw_admin
adminPassword=tw_admin
applyPerfTuningSetting=standard
dbJDBCClasspath=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2
dbType=DB2_UNIVERSAL
dbUserId=bpmadmin
dbPassword=bpmadmin1
dbHostName=DB_hostname
dbServerPort=50000
dbCreateNew=true
dbDelayConfig=false
```

```
procSvrDbName=PCBPMDB<
dbProcSvrUserId=procadmin
dbProcSvrPassword=procpwd
perfDWDbName=PCPERFDB
dbPerfDWUserId=perfadmin
dbPerfDWPassword=perfpwd
samplesPassword=smppwd
```

The following example shows a response file to create a stand-alone Process Server profile on Windows.

```
#******************************************************************************
# Creates a stand-alone Process Server profile on a Windows platform.
# Call manageprofiles -response PSStd_StandAlone_DB2_UNIVERSAL_Win.response
#******************************************************************************

create
templatePath=C:/Program Files/IBM/WebSphere/AppServer/profileTemplates/BPM/default.procsvr
profileName=ProcSrv01
cellName=SampleCell
nodeName=SampleNode01
serverName=server1
hostName=SampleHost.com
environmentName=SampleEnv
winserviceCheck=false
enableAdminSecurity=true
adminUserName=tw_admin
adminPassword=tw_admin
processCenterURL=http://processcenter_hostname:9080
processCenterUserId=tw_admin
processCenterPassword=tw_admin
applyPerfTuningSetting=standard
dbJDBCClasspath=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2
dbType=DB2_UNIVERSAL
dbUserId=bpmadmin
dbPassword=bpmadmin1
dbHostName=DB_hostname
dbServerPort=50000
dbCreateNew=true
dbDelayConfig=false
procSvrDbName=PSBPMDB
perfDWDbName=PSPERFDB
samplesPassword=smppwd
```

Configuring the software after a Custom installation to create one or more stand-alone profiles using manageprofiles:

After performing a Custom installation you can create stand-alone server profiles using the Profile Management Tool or the manageprofiles command-line utility.

The information in this section describes how to use the manageprofiles command-line utility to create stand-alone profiles. It assumes that you have run the installer and have performed a Custom installation.

You can also use the Profile Management Tool to create stand-alone profiles after performing a Custom installation

Creating Process Server stand-alone profiles using manageprofiles:

Use the **manageprofiles** command-line utility to create Process Server stand-alone profiles for IBM Business Process Manager Advanced .

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:

- You have reviewed the full list of prerequisites for creating or augmenting a profile at Prerequisites for creating or augmenting profiles
- You have reviewed example profile creation commands.
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

This task describes how to use the **manageprofiles** command-line utility to create Process Server stand-alone profiles for IBM Business Process Manager Advanced.

To use the **manageprofiles** command-line utility to create a profile, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates and under *install_root*/profileTemplates for other products.

   The following templates are available:
   - default.procsvr: for Process Server stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - default.procsvr.adv: for Process Server stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Advanced.
   - default.esbserver: for WebSphere Enterprise Service Bus stand-alone server profiles, which define stand-alone servers.

2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.

3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.

4. Create a response file.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail. See Creating a response file using the IBM Business Process Manager samples.

5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - `Linux` `UNIX` **manageprofiles.sh -response** *myResponseFile*

   - `Windows` **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

6. Manually configure the SMTP server to enable mail notifications. Refer to Configuring the SMTP server.

Related concepts:

"Creating stand-alone profiles after a custom installation" on page 189
After you perform a Custom installation, you can use the Profile Management Tool or the **manageprofiles** command-line utility to create a stand-alone server profile.

"**manageprofiles** examples" on page 259
This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

Creating Process Center stand-alone profiles using manageprofiles command-line utility:

Use **manageprofiles** command-line utility to create Process Center stand-alone profiles for IBM Business Process Manager Advanced .

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:
- You have reviewed the full list of prerequisites for creating or augmenting a profile
- You have reviewed example profile creation commands
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

This task describes how to use the **manageprofiles** command-line utility to create Process Center profiles for IBM Business Process Manager Advanced.

To use the **manageprofiles** command-line utility to create a profile, perform the following steps.
1. Determine the kind of profile you want to create, which in turn determines the template to use for your new profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates and under *install_root*/profileTemplates for other products.

   The following templates are available:
   - default.procctr: for Process Center stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - default.procctr.adv: for Process Center stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Advanced.
2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.
3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.
4. Create a response file.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail. See Creating a response file using the IBM Business Process Manager samples.
5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux   UNIX   **manageprofiles.sh -response** *myResponseFile*

   - Windows   **manageprofiles.bat -response** *myResponseFile*

The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

6. Manually configure the SMTP server to enable mail notifications. Refer to Configuring the SMTP server.

Related concepts:

"**manageprofiles** examples" on page 259
This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

Configuring the software after a Custom installation to create one or more Deployment manager and Custom profiles using manageprofiles:

After performing a Custom installation you can create deployment manager and custom (managed node) profiles using the Profile Management Tool or the manageprofiles command-line utility.

The information in this section describes how to use the manageprofiles command-line utility to create deployment manager and custom (managed node) profiles for a network deployment configuration. It assumes that you have run the installer and have performed a Custom installation.

For information about using the Profile Management Tool to create deployment manager and custom (managed node) profiles after performing a Custom installation, see Creating custom profiles (managed nodes) by using the Profile Management Tool.

Creating Process Server deployment manager and custom profiles using manageprofiles:

Use the **manageprofiles** command-line utility to createProcess Server deployment manager and custom profiles for a network deployment configuration.

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:

- You have reviewed the full list of prerequisites for creating or augmenting a profile
- You have reviewed example profile creation commands
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

This task describes how to use the **manageprofiles** command-line utility to create Process Server deployment manager and custom profiles for a network deployment configuration.

To use the **manageprofiles** command-line utility to create the profiles, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates and under *install_root*/profileTemplates for other products.

   The following templates are available:
   - dmgr.procsvr: for a Process Server deployment manager profile, which defines a deployment manager. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - dmgr.procsvr.adv: for Process Server deployment manager profiles, which define deployment manager servers with capabilities and functionality specific to an IBM BPM Advanced configuration.
   - managed.procsvr: for a Process Server custom profile, which, when federated to a deployment manager, defines a managed node. If you have decided that your solution requires a network

deployment configuration, your runtime environment requires one or more managed nodes. A *custom profile* contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating. Also, IBM Business Process Manager Advanced: Process Server profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use a IBM Business Process Manager Advanced: Process Server deployment manager.
- `managed.procsvr.adv`: for Process Server custom profiles which, when federated to a deployment manager, define a managed node with capabilities and functionality specific to an IBM BPM Advanced configuration.
- `dmgr.esbserver`: for a WebSphere Enterprise Service Bus deployment manager profile, which defines a deployment manager.
- `managed.esbserver`: for a WebSphere Enterprise Service Bus custom profile, which, when federated to a deployment manager, defines a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating. WebSphere Enterprise Service Bus profiles can use an Enterprise Service Bus deployment manager or Process Server deployment manager.

2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.

3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.

4. Create a response file.

   Sample response files are available under the `install_root/BPM/samples/manageprofiles/` directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail. See Creating a response file using the IBM Business Process Manager samples.

5. Run the **manageprofiles** command from the command line, using the **–response** parameter and the name of the response file that you created.

   - Linux   UNIX   **manageprofiles.sh -response** *myResponseFile*

   - Windows   **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

6. Manually configure the SMTP server to enable mail notifications. Refer to Configuring the SMTP server.

Related concepts:

"**manageprofiles** examples" on page 259
This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

Creating Process Center deployment manager and custom profiles using manageprofiles:

Use the **manageprofiles** command-line utility to create Process Center deployment manager and custom profiles for a network deployment configuration .

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:
- You have reviewed the full list of prerequisites for creating or augmenting a profile

- You have reviewed example profile creation commands
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

This task describes how to use the **manageprofiles** command-line utility to create Process Center deployment manager and custom profiles for a network deployment configuration.

To use the **manageprofiles** command-line utility to create a profile, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates and under *install_root*/profileTemplates for other products.

   The following templates are available:
   - dmgr.procctr: for a Process Center deployment manager profile, which defines a deployment manager. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - managed.procctr: for a Process Center custom profile, which, when federated to a deployment manager, defines a managed node. If you have decided that your solution requires a deployment environment, your runtime environment requires one or more managed nodes. A *custom profile* contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.

2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.

3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.

4. Create a response file.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail. See Creating a response file using the IBM Business Process Manager samples.

5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - `Linux` `UNIX` **manageprofiles.sh -response** *myResponseFile*

   - `Windows` **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

6. Manually configure the SMTP server to enable mail notifications. Refer to Configuring the SMTP server.

Related concepts:

"Prerequisites for creating or augmenting profiles" on page 183
Before creating or augmenting a profile, you must ensure that a series of prerequisites have been met.

"**manageprofiles** examples"
This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

manageprofiles examples:

This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

The examples in this section cover stand-alone, deployment manager, and custom (managed node) profiles.

Related tasks:

"Creating Process Center deployment manager and custom profiles using manageprofiles" on page 257
Use the **manageprofiles** command-line utility to create Process Center deployment manager and custom profiles for a network deployment configuration .

Examples: Creating Process Server and WebSphere ESB profiles with manageprofiles command-line utility using a DB2 database:

This topic contains example profile creation commands to help you create *Process Server* stand-alone server, deployment manager, and custom profiles using the **manageprofiles** command-line utility on your installation with a DB2 database.

Stand-alone server profile

The following command example creates an IBM Business Process Manager stand-alone server profile called *my_BPM_PSVRSA_profile* on a Windows server. The parameters in Specified **manageprofiles** command-line utility parameters and Defaulted **manageprofiles** command-line utility parameters specify the following:

- The DB2 database product will be used for the Common, Process Server and Performance Data Warehouse databases, which are all assumed to already exist on the localhost. All databases are set to be configured later (the **-dbDelayConfig "true"** command parameter value specifies that configuration scripts be created but not run). For complete listings of database-related **manageprofiles** parameters, see the topic *manageprofiles parameters*.
- The Windows service will be set for manual startup.
- A sample Business Process Choreographer configuration will *not* be created.
- The Business Rules Manager will be configured.
- Business Space powered by WebSphere will *not* be configured.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a stand-alone server profile.

Table 105. Specified `manageprofiles` command-line utility parameters

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\default.procsvr.adv" (must be fully qualified)
-profileName	"*my_BPM_PSVRSA_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbServerPort	"50000"
-dbHostName	"localhost"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-dbName	"CMNDB"
-procSvrDbName	"BPMDB"
-perfDWDbName	"PDWDB"
-dbCreateNew	"false"
-dbDelayConfig	"true"
-dbUserId	"*db_id*"
-dbPassword	"*db_pwd*"
-configureBPC	"false"
-configureBSpace	"false"
-configureBRM	"true"
-samplesPassword	"*samples_pwd*"
-environmentName	"*environment_name*"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Tip: The **samplesPassword** parameter is only required when using Samples.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 106. Defaulted `manageprofiles` command-line utility parameters

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRSA_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"
-cellName	"*host_name*Node*node_number**cell_number*Cell"
`Windows` -environmentType	"Test"
`Windows` -processCenterURL	Defaults to an offline server when no URL is specified.
`Windows` -winserviceCheck	"true"
`Windows` -winserviceAccountType	"localsystem"
`Windows` -winserviceStartupType	"manual"

Parameter	Default values
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\DB2"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_PSVRSA_profile*\dbscripts"

WebSphere Enterprise Service Bus stand-alone server profile

Here is a similar example that creates a WebSphere Enterprise Service Bus stand-alone server profile called *my_WESBSA_profile*. There is a difference:
• The DB2 database product will be used for the Common database, which is set to be created and configured on the localhost during the profile creation process.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values.

Table 107. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\default.esbserver" (must be fully qualified)
-profileName	"*my_WESBSA_profile*"
-enableAdminSecurity	"true"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbServerPort	"50000"
-dbHostName	"localhost"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-dbName	"CMNDB"
-dbCreateNew	"true"
-dbDelayConfig	"false"
-dbUserId	"*db_id*"
-dbPassword	"*db_pwd*"
-configureBSpace	"false"
-samplesPassword	"*samples_pwd*"

Tip: The **samplesPassword** parameter is only required when using Samples.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 108. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_WESBSA_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

Table 108. Defaulted **manageprofiles** *command-line utility parameters (continued)*

Parameter	Default values
-cellName	"*host_name*Node*node_number*cell_number*Cell"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbOutputScriptDir	"*install_root*\profiles*my_WESBSA_profile*\dbscripts"

Deployment manager profile

The following command example creates a deployment manager profile called
my_BPM_PSVRDMGR_profile on a Windows server.

The parameters in Table 109 and Table 110 on page 263 specify the following:

- The DB2 database product will be used for the Common database, which is assumed to exist on a
  remote host. The database is set to be configured later (the **-dbDelayConfig "true"** command
  parameter value specifies that configuration scripts be created but not run). For a complete listing of
  database-related **manageprofiles** parameters, see the topic *manageprofiles parameters*.
- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports).
  The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the
  -portsFile parameter. See *manageprofiles parameters* in the reference documentation for a listing of all
  valid **manageprofiles** parameters.
- Administrative security will be enabled.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility
parameters with example values used to create a deployment manager profile.

Table 109. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\dmgr.procsvr.adv" (must be fully qualified)
-profileName	"*my_BPM_PSVRDMGR_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-dbName	"CMNDB"
-dbCreateNew	"false"
-dbDelayConfig	"true"
-dbUserId	"*db_id*"
-dbPassword	"*db_pwd*"
-dbHostName	"*remote_host_name*"

Table 109. Specified `manageprofiles` *command-line utility parameters (continued)*

Parameter	Value
-dbServerPort	"50000"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 110. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRDMGR_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*CellManager*node_number*"
-cellName	"*host_name*Cell*cell_number*"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\DB2"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_PSVRDMGR_profile*\dbscripts"

WebSphere Enterprise Service Bus deployment manager profile

Here is a similar example that creates a WebSphere Enterprise Service Bus deployment manager profile called *my_WESBDMGR_profile*. The difference is the DB2 database product will be used for the Common database, which is set to be created and configured on the localhost during the profile creation process.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a deployment manager profile.

Table 111. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\dmgr.esbserver" (must be fully qualified)
-profileName	"*my_WESBDMGR_profile*"
-enableAdminSecurity	"true"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-dbName	"CMNDB"
-dbCreateNew	"true"

Table 111. Specified `manageprofiles` *command-line utility parameters (continued)*

Parameter	Value
-dbDelayConfig	"false"
-dbUserId	"*db_id*"
-dbPassword	"*db_pwd*"
-dbHostName	"localhost"
-dbServerPort	"50000"

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 112. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_WESBDMGR_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*CellManager*node_number*"
-cellName	"*host_name*Cell*cell_number*"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbOutputScriptDir	"*install_root*\profiles*my_WESBDMGR_profile*\dbscripts"

Custom profile

The following command example creates a custom profile called *my_BPM_PSVRCUSTOM_profile* on a Windows server.

This example is set to operate with the deployment manager profile created above.

The parameters in Table 113 on page 265 and Table 114 on page 265 specify the following:
- The DB2 database product will be used for the Common database, which is assumed to already exist. The custom profile creation needs to point to the database used by the deployment manager to which the custom profile will be federated.
- Administrative security will be enabled on the deployment manager to which the custom profile will be federated.
- The custom node will be federated during profile creation for which the deployment manager must be running.

  Tip: If the deployment manager is not running, or you want to federate the custom node after profile creation, set the **federateLaterBPM** to true.

See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a custom profile.

Table 113. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\ managed.procsvr.adv" (must be fully qualified)
-profileName	"*my_BPM_PSVRCUSTOM_profile*"
-dmgrHost	"*remote_host*"
-dmgrPort	"8879" (To find the -dmgrPort value, go to the *dmgr_profile_root*\logs directory for the deployment manager associated with this custom profile. In this directory, open the AboutThisProfile.txt file and find the value for the entry "Management SOAP connector port:".)
-dmgrAdminPassword	"*admin_pwd*"
-dmgrAdminUserName	"*admin_id*"
-federateLaterBPM	"false"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\DB2"

Remember: If the **federateLaterBPM** parameter is set to true, then the dmgrHost, dmgrPort, dmgrAdminPassword and dmgrAdminUserName do not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 114. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRCUSTOM_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

WebSphere Enterprise Service Bus example

Here is a similar example that creates a WebSphere Enterprise Service Bus custom profile called *my_WESBCUSTOM_profile*. The difference is the DB2 database product will be used for the Common database on the deployment manager to which the custom profile will be federated. This example is set to operate with the WebSphere Enterprise Service Bus deployment manager profile created above.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a custom profile.

Table 115. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\managed.esbserver" (must be fully qualified)
-profileName	"*my_WESBCUSTOM_profile*"
-dmgrHost	"*remote_host*"

Table 115. Specified `manageprofiles` *command-line utility parameters (continued)*

Parameter	Value
-dmgrPort	"8879" (To find the -dmgrPort value, go to the *dmgr_profile_root*\logs directory for the deployment manager associated with this custom profile. In this directory, open the AboutThisProfile.txt file and find the value for the entry "Management SOAP connector port:".)
-dmgrAdminPassword	"*admin_pwd*"
-dmgrAdminUserName	"*admin_id*"
-federateLaterWESB	"false"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\DB2"

Remember: If the **federateLaterWESB** parameter is set to true, then the dmgrHost, dmgrPort, dmgrAdminPassword and dmgrAdminUserName do not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 116. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_WESBCUSTOM_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

Examples: Creating Process Center profiles with manageprofiles command-line utility using an Oracle database:

This topic contains example profile creation commands to help you create Process Center stand-alone server, deployment manager and custom profiles using the manageprofiles command-line utility on your installation with an Oracle database.

Stand-alone server profile

The following command example creates a Process Center stand-alone profile called *my_BPM_PCTRSA_profile* on a Windows server.

The parameters in Specified **manageprofiles** command-line utility parameters specify the following features:
- The Oracle database product will be used for both the Common, Process Server and Performance Data Warehouse databases, which are assumed to already exist on the localhost. All databases are set to be configured later (the **-dbDelayConfig "true"** command parameter value specifies that configuration scripts be created but not run).
- The Windows service will be set for manual startup.
- The Business Rules Manager will *not* be configured.
- Business Space powered by WebSphere will be configured.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.

- Administrative security will be enabled.

All user IDs specified for profile creation should already exist in the database before any database configuration is performed:

- If **dbDelayConfig** is set to false, the user IDs must be created before profile creation.
- If **dbDelayConfig** is set to true, the user IDs can be created at the same time as the database tables after profile creation is complete and before starting the server.

  Note: If **dbDelayConfig** is set to true, the bootstrapPocessServerData script must be run before starting the server. See, "Loading the database with system information" on page 384 for details. In this scenario, this step does apply to stand-alone profiles.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a stand-alone server profile.

Table 117. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\default.procctr.adv" (must be fully qualified)
-profileName	"*my_BPM_PCTRSA_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbServerPort	"1521"
-dbType	"ORACLE"
-dbName	"CMNDB"
-procSvrDbName	"BPMDB"
-dbProcSvrUserId	"*procsvr_db_id*"
-dbProcSvrPassword	"*procsvr_db_pwd*"
-perfDWDbName	"PDWDB"
-dbPerfDWUserId	"*perfdw_db_id*"
-dbPerfDWPassword	"*perfdw_db_pwd*"
-dbDelayConfig	"true"
-dbPassword	"*db_pwd*"
-configureBSpace	"true"
-configureBRM	"false"
-samplesPassword	"*samples_pwd*"
-environmentName	"*environment_name*"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Tip: The **samplesPassword** parameter is only required when using Samples.

Restriction: The **dbProcSvrUserId** and **dbPerfDWUserId** parameters cannot have the same value if the same value was given for the **procSvrDbname** and **perfDWDbName** parameters.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 118. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PCTRSA_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"
-cellName	"*host_name*Node*node_number*cell_*number*Cell"
`Windows` -environmentType	"Test"
`Windows` -winserviceCheck	"true"
`Windows` -winserviceAccountType	"localsystem"
`Windows` -winserviceStartupType	"manual"
`Windows` -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\Oracle"
-dbOutputscriptDir	"*install_root*\profiles*my_BPM_PCTRSA_profile*\dbscripts"
-dbHostName	"local_host_name"

Additional manageprofiles command-line utility parameters for Oracle shows additional **manageprofiles** command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Table 119. Additional **manageprofiles** *command-line utility parameters for Oracle*

Parameter	Value	Remarks
-dbCommonUserId	"*common_db_userID*" (used to create Common DB objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbCommonUserId is ORCCOMM
-dbCommonPassword	"*common_db_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCommonPassword will be set to dbPassword. For example: dbCommonPassword = dbPassword
-dbBSpaceUserId	"*bspace_db_userID*" (used to configure Business Space)	This parameter is needed if you require your own Business Space schema. If not, the default value (IBMBUSSP) will be set.
-dbBSpacePassword	"*bspace_db_pwd*" (used to configure Business Space)	This parameter is needed if you need your own Business Space password otherwise default value will be set in the following order: dbBSpacePassword = "YouNameIt" else dbBSpacePassword = dbPassword [if exists] else dbBSpacePassword = IBMBUSSP

Table 119. Additional `manageprofiles` *command-line utility parameters for Oracle (continued)*

Parameter	Value	Remarks
-dbCeiMeUserId	"*cei_me_userID*" (used to create CEI ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbCeiMeId is ORCCM00
-dbCeiMePassword	"*cei_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbCeiMePassword = dbPassword
-dbAppMeUserId	"*app_me_userID*" (used to create SCAAPP ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbAppMeId is ORCSA00
-dbAppMePassword	"*app_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbAppMePassword = dbPassword

Deployment manager profile

The following command example creates a deployment manager profile called *my_BPM_PCTRDMGR_profile* on a Windows server.

The parameters in Specified manageprofiles command-line utility parameters specify the following:

- The Oracle database product will be used for the Common database, which is assumed to exist on a remote host. The database is set to be configured later (the **-dbDelayConfig "true"** command parameter value specifies that configuration scripts be created but not run).
- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a deployment manager profile.

Table 120. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A

Table 120. Specified `manageprofiles` *command-line utility parameters (continued)*

Parameter	Value
-templatePath	"*install_root*\profileTemplates\BPM\dmgr.procctr.adv" (must be fully qualified)
-profileName	"*my_BPM_PCTRDMGR_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbType	"ORACLE"
-dbName	"CMNDB"
-dbDelayConfig	"true"
-dbPassword	"*db_pwd*"
-dbHostName	"*remote_host_name*"
-dbServerPort	"1521"

Remember: The `enableAdminSecurity` parameter is always true and cannot be false so it does not need to be specified.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 121. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PCTRDMGR_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*CellManager*node_number*"
-cellName	"*host_name*Cell*cell_number*"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\Oracle"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_PCTRDMGR_profile*\dbscripts"

Additional manageprofiles command-line utility parameters for Oracle shows additional **manageprofiles** command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Table 122. Additional `manageprofiles` *command-line utility parameters for Oracle*

Parameter	Default values
-dbCommonUserId	"*common_db_userID*" (used to create Common DB objects)
-dbCommonPassword	"*common_db_pwd*"

Custom profile

The following command example creates a custom profile called *my_BPM_PCTRCUSTOM_profile* on a Windows server.

This example is set to operate with the deployment manager profile created above.

The parameters in Table 123 and Table 124 on page 272 specify the following:

- The Oracle database product will be used for the Common database, which is assumed to already exist. The custom profile creation needs to point to the database used by the deployment manager to which the custom profile will be federated.
- Administrative security will be enabled on the deployment manager to which the custom profile will be federated.
- The custom node will be federated during profile creation for which the deployment manager must be running.

  Tip: If the deployment manager is not running, or you want to federate the custom node after profile creation, set the **federateLaterBPM** to true.

See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a custom profile.

Table 123. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\ managed.procctr.adv" (must be fully qualified)
-profileName	"*my_BPM_PCTRCUSTOM_profile*"
-dmgrHost	"*remote_host*"
-dmgrPort	"8879" (To find the -dmgrPort value, go to the *dmgr_profile_root*\logs directory for the deployment manager associated with this custom profile. In this directory, open the AboutThisProfile.txt file and find the value for the entry "Management SOAP connector port:".)
-dmgrAdminPassword	"*admin_pwd*"
-dmgrAdminUserName	"*admin_id*"
-federateLaterBPM	"false"
-dbType	"ORACLE"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\Oracle"

Remember: If the **federateLaterBPM** parameter is set to true, then the dmgrHost, dmgrPort, dmgrAdminPassword and dmgrAdminUserName do not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 124. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PCTRCUSTOM_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

Examples: Creating Process Server and WebSphere ESB profiles with **manageprofiles** *command-line utility using an Oracle database:*

This topic contains example profile creation commands to help you create *Process Server* stand-alone server, deployment manager, and custom profiles using the **manageprofiles** command-line utility on your installation with an Oracle database.

Stand-alone server profile

The following command example creates an IBM Business Process Manager stand-alone profile called *my_BPM_PSVRSA_profile* on a Windows server.

The parameters in Specified **manageprofiles** command-line utility parameters, Defaulted **manageprofiles** command-line utility parameters, and Additional **manageprofiles** command-line utility parameters for Oracle specify the following features:

- The Oracle database product will be used for the Common, Process Server and Performance Data Warehouse databases, which are all assumed to already exist on the localhost. All databases are set to be configured later (the **-dbDelayConfig "true"** command parameter value specifies that configuration scripts be created but not run). For complete listings of database-related **manageprofiles** parameters, see the topic *manageprofiles parameters*.
- The Windows service will be set for manual startup.
- The Business Rules Manager will *not* be configured.
- Business Space powered by WebSphere will be configured.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

All user IDs specified for profile creation should already exist in the database before any database configuration is performed:

- If **dbDelayConfig** is set to false, the user IDs must be created before profile creation.
- If **dbDelayConfig** is set to true, the user IDs can be created at the same time as the database tables after profile creation is complete and before starting the server.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a stand-alone server profile.

Table 125. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\default.procsvr.adv" (must be fully qualified)

Table 125. Specified `manageprofiles` *command-line utility parameters (continued)*

Parameter	Value
-profileName	"*my_BPM_PSVRSA_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbServerPort	"1521"
-dbType	"ORACLE"
-dbName	"CMNDB"
-procSvrDbName	"BPMDB
-dbProcSvrUserId	"*procsvr_db_id*"
-dbProcSvrPassword	"*procsvr_db_pwd*"
-perfDWDbName	"PDWDB"
-dbPerfDWUserId	"*perfdw_db_id*"
-dbPerfDWPassword	"*perfdw_db_pwd*"
-dbDelayConfig	"true"
-dbPassword	"*db_pwd*"
-configureBSpace	"true"
-configureBRM	"false"
-samplesPassword	"*samples_pwd*"
-environmentName	"*environment_name*"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Tip: The **samplesPassword** parameter is only required when using Samples.

Restriction: The **dbProcSvrUserId** and **dbPerfDWUserId** parameters cannot have the same value if the same value was given for the **procSvrDbname** and **perfDWDbName** parameters.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 126. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRSA_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"
-cellName	"*host_name*Node*node_number*cell_number*Cell*"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"
-dbOutputscriptDir	"*install_root*\profiles*my_BPM_PSVRSA_profile*\dbscripts"

Table 126. Defaulted `manageprofiles` *command-line utility parameters (continued)*

Parameter	Default values
-dbHostName	"local_host_name"

Additional manageprofiles command-line utility parameters for Oracle shows additional **manageprofiles** command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Table 127. Additional `manageprofiles` *command-line utility parameters for Oracle*

Parameter	Value	Remarks
-dbCommonUserId	"*common_db_userID*" (used to create Common DB objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbCommonUserId is ORCCOMM
-dbCommonPassword	"*common_db_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCommonPassword will be set to dbPassword. For example: dbCommonPassword = dbPassword
-dbBSpaceUserId	"*bspace_db_userID*" (used to configure Business Space)	This parameter is needed if you require your own Business Space schema. If not, the default value (IBMBUSSP) will be set.
-dbBSpacePassword	"*bspace_db_pwd*" (used to configure Business Space)	This parameter is needed if you need your own Business Space password otherwise default value will be set in the following order: dbBSpacePassword = "YouNameIt" else dbBSpacePassword = dbPassword [if exists] else dbBSpacePassword = IBMBUSSP
-dbCeiMeUserId	"*cei_me_userID*" (used to create CEI ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbCeiMeId is ORCCM00
-dbCeiMePassword	"*cei_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbCeiMePassword = dbPassword
-dbAppMeUserId	"*app_me_userID*" (used to create SCAAPP ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbAppMeId is ORCSA00

Table 127. Additional `manageprofiles` *command-line utility parameters for Oracle (continued)*

Parameter	Value	Remarks
-dbAppMePassword	"*app_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbAppMePassword = dbPassword

WebSphere Enterprise Service Bus stand-alone server profile

Here is a similar example that creates a WebSphere Enterprise Service Bus stand-alone server profile called *my_BPM_WESBSA_profile*. The difference is the database is set to be configured now (the -dbDelayConfig "false" command parameter value specifies that configuration scripts be run).

Specified manageprofiles command-line utility parameters shows `manageprofiles` command-line utility parameters with example values.

Table 128. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\default.esbserver" (must be fully qualified)
-profileName	"*my_BPM_WESBSA_profile*"
-enableAdminSecurity	"true"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbServerPort	"1521"
-dbType	"ORACLE"
-dbName	"CMNDB"
-dbDelayConfig	"false"
-dbPassword	"*db_pwd*"
-configureBSpace	"true"
-samplesPassword	"*samples_pwd*"

Tip: The `samplesPassword` parameter is only required when using Samples.

Defaulted manageprofiles command-line utility parameters shows `manageprofiles` command-line utility parameters with default values that do not normally have to be changed.

Table 129. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_WESBSA_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"
-cellName	"*host_name*Node*node_number**cell_number*Cell"
Windows -winserviceStartupType	"manual"

Table 129. Defaulted `manageprofiles` *command-line utility parameters (continued)*

Parameter	Default values
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceUserName	"Administrator"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_WESBSA_profile*\ dbscripts"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"
-dbHostName	"*local_host_name*"

Additional manageprofiles command-line utility parameters for Oracle shows additional `manageprofiles` command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Table 130. Additional `manageprofiles` *command-line utility parameters for Oracle*

Parameter	Default values	Remarks
-dbCommonUserId	"*common_db_userID*" (used to create Common DB objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbCommonUserId is ORCCOMM
-dbCommonPassword	"*common_db_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation.

For the Generate Users with Single Password option, dbCommonPassword will be set to dbPassword. For example: dbCommonPassword = dbPassword |
| -dbBSpaceUserId | "*bspace_db_userID*" (used to configure Business Space) | This parameter is needed if you require your own Business Space schema. If not, the default value (IBMBUSSP) will be set. |
| -dbBSpacePassword | "*bspace_db_pwd*" (used to configure Business Space) | This parameter is needed if you need your own Business Space password otherwise default value will be set in the following order: dbBSpacePassword = "YouNameIt" else dbBSpacePassword = dbPassword [if exists] else dbBSpacePassword = IBMBUSSP |
| -dbCeiMeUserId | "*cei_me_userID*" (used to create CEI ME objects) | This parameter is needed if you select the Custom Users and Passwords option during profile creation.

For Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbCeiMeId is ORCCM00 |

Table 130. Additional `manageprofiles` *command-line utility parameters for Oracle (continued)*

Parameter	Default values	Remarks
-dbCeiMePassword	"*cei_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbCeiMePassword = dbPassword
-dbAppMeUserId	"*app_me_userID*" (used to create SCAAPP ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbAppMeId is ORCSA00
-dbAppMePassword	"*app_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbAppMePassword = dbPassword

Deployment manager profile

The following command example creates a deployment manager profile called *my_BPM_PSVRDMGR_profile* on a Windows server.

The parameters in Table 131, Table 132 on page 278, and Table 133 on page 278 specify the following:
- The Oracle database product will be used for the Common database, which is assumed to exist on a remote host. The database is set to be configured later (the **-dbDelayConfig "true"** command parameter value specifies that configuration scripts be created but not run). See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a deployment manager profile.

Table 131. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A

Table 131. Specified `manageprofiles` *command-line utility parameters (continued)*

Parameter	Value
-templatePath	"*install_root*\profileTemplates\BPM\dmgr.procsvr.adv" (must be fully qualified)
-profileName	"*my_BPM_PSVRDMGR_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbType	"ORACLE"
-dbName	"CMNDB"
-dbDelayConfig	"true"
-dbPassword	"*db_pwd*"
-dbHostName	"*remote_host_name*"
-dbServerPort	"1521"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 132. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRDMGR_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*CellManager*node_number*"
-cellName	"*host_name*Cell*cell_number*"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_PSVRDMGR_profile*\dbscripts"

Additional manageprofiles command-line utility parameters for Oracle shows additional **manageprofiles** command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Table 133. Additional `manageprofiles` *command-line utility parameters for Oracle*

Parameter	Default values
-dbCommonUserId	"*common_db_userID*" (used to create Common DB objects)
-dbCommonPassword	"*common_db_pwd*"

WebSphere Enterprise Service Bus deployment manager profile

Here is a similar example that creates a WebSphere Enterprise Service Bus deployment manager profile called *my_WESBDMGR_profile*. The difference is the Oracle database product will be used for the Common database, which is set to be created and configured on the localhost during the profile creation process.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a deployment manager profile.

Table 134. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\dmgr.esbserver" (must be fully qualified)
-profileName	"*my_WESBDMGR_profile*"
-enableAdminSecurity	"true"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbType	"ORACLE"
-dbName	"CMNDB"
-dbDelayConfig	"false"
-dbPassword	"*db_pwd*"
-dbHostName	"localhost"
-dbServerPort	"1521"

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 135. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_WESBDMGR_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*CellManager*node_number*"
-cellName	"*host_name*Cell*cell_number*"
`Windows` -winserviceCheck	"true"
`Windows` -winserviceAccountType	"localsystem"
`Windows` -winserviceStartupType	"manual"
`Windows` -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"
-dbOutputScriptDir	"*install_root*\profiles*my_WESBDMGR_profile*\dbscripts"

Additional manageprofiles command-line utility parameters for Oracle shows additional **manageprofiles** command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Table 136. Additional `manageprofiles` command-line utility parameters for Oracle

Parameter	Default values
-dbCommonUserId	"*common_db_userID*" (used to create Common DB objects)
-dbCommonPassword	"*common_db_pwd*"

Custom profile

The following command example creates a custom profile called *my_BPM_PSVRCUSTOM_profile* on a Windows server.

This example is set to operate with the deployment manager profile created above.

The parameters in Table 137 and Table 138 on page 281 specify the following:
- The Oracle database product will be used for the Common database, which is assumed to already exist. The custom profile creation needs to point to the database used by the deployment manager to which the custom profile will be federated.
- Administrative security will be enabled on the deployment manager to which the custom profile will be federated.

See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a custom profile.

Table 137. Specified `manageprofiles` command-line utility parameters

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\ managed.procsvr.adv" (must be fully qualified)
-profileName	"*my_BPM_PSVRCUSTOM_profile*"
-dmgrHost	"*remote_host*"
-dmgrPort	"8879" (To find the -dmgrPort value, go to the *dmgr_profile_root*\logs directory for the deployment manager associated with this custom profile. In this directory, open the AboutThisProfile.txt file and find the value for the entry "Management SOAP connector port:".)
-dmgrAdminPassword	"*admin_pwd*"
-dmgrAdminUserName	"*admin_id*"
-federateLaterBPM	"false"
-dbType	"ORACLE"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"

Remember: If the **federateLaterBPM** parameter is set to true, then the dmgrHost, dmgrPort, dmgrAdminPassword and dmgrAdminUserName do not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 138. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRCUSTOM_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

WebSphere Enterprise Service Bus example

Here is a similar example that creates a WebSphere Enterprise Service Bus custom profile called *my_WESBCUSTOM_profile*. The difference is the Oracle database product will be used for the Common database on the deployment manager to which the custom profile will be federated. This example is set to operate with the WebSphere Enterprise Service Bus deployment manager profile created above.

Specified `manageprofiles` command-line utility parameters shows `manageprofiles` command-line utility parameters with example values used to create a custom profile.

Table 139. Specified `manageprofiles` *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\managed.esbserver" (must be fully qualified)
-profileName	"*my_WESBCUSTOM_profile*"
-dmgrHost	"*remote_host*"
-dmgrPort	"8879" (To find the -dmgrPort value, go to the *dmgr_profile_root*\logs directory for the deployment manager associated with this custom profile. In this directory, open the AboutThisProfile.txt file and find the value for the entry "Management SOAP connector port:".)
-dmgrAdminPassword	"*admin_pwd*"
-dmgrAdminUserName	"*admin_id*"
-federateLaterWESB	"false"
-dbType	"ORACLE"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"

Remember: If the `federateLaterWESB` parameter is set to true, then the dmgrHost, dmgrPort, dmgrAdminPassword and dmgrAdminUserName do not need to be specified.

Defaulted `manageprofiles` command-line utility parameters shows `manageprofiles` command-line utility parameters with default values that do not normally have to be changed.

Table 140. Defaulted `manageprofiles` *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_WESBCUSTOM_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

Examples: Using a database design file with the manageprofiles command:

If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

If you specify the **-bpmdbDesign** parameter and provide the name for the database design file, the only other database parameter that you need to specify is the **dbDelayConfig** parameter.

Stand-alone server profile for BPM Standard

The following example creates a stand-alone server profile called *SAPC* for BPM Standard:

```
manageprofiles.bat -create -templatePath C:\w\4210\profileTemplates\BPM\default.procctr -profileName SAPC -profilePath C:\w
```

Stand-alone server profile for BPM Advanced

The following example creates a stand-alone server profile called *SAAPC* for BPM Advanced:

```
manageprofiles.bat -create -templatePath C:\w\4210\profileTemplates\BPM\default.procctr.adv -profileName SAAPC -profilePath
manageprofiles.bat -create -templatePath C:\w\4210\profileTemplates\default.esbserver -profileName SAESB -profilePath C:\w\
```

Deleting profiles using the manageprofiles command-line utility:

You can delete a profile from the command line using the **manageprofiles** command-line utility.

For more information about the **manageprofiles** command-line utility, see manageprofiles command-line utility.

1. Open a command prompt and run one of the following commands, based on your operating system:

   - Linux   UNIX `manageprofiles.sh -delete -profileName `*`profile_name`*

   - Windows `manageprofiles.bat -delete -profileName `*`profile_name`*

   The variable *profile_name* represents the name of the profile that you want to delete.

2. Confirm that the profile deletion has completed by checking the following log file:

   - Linux   UNIX *install_root*`/logs/manageprofiles/`*profile_name*`_delete.log`

   - Windows *install_root*`\logs\manageprofiles\`*profile_name*`_delete.log`

If you plan to recreate a deleted profile using both the same profile name and the same database names that are associated with the deleted profile, you must manually delete the associated database names before you attempt to recreate the profile name and the database names.

Augmenting profiles

You can augment an existing profile for WebSphere Application Server version 7.0 or WebSphere Application Server Network Deployment version 7.0 to add support for WebSphere Enterprise Service Bus or IBM Business Process Manager, or you can augment a WebSphere Enterprise Service Bus version 7.5 profile to add support for IBM Business Process Manager.

- See the list of prerequisites for creating or augmenting profiles in the topic Prerequisites for creating or augmenting profiles.
- Ensure that the profile has the following characteristics:
  - It exists on a system with an installation of IBM Business Process Manager.
  - It is not federated to a deployment manager. You cannot use the Profile Management Tool or the **manageprofiles** command-line utility to augment federated profiles.
  - It does not have running servers.

If you have existing WebSphere Application Server or WebSphere Application Server Network Deployment profiles on your system, you might want the operating environments defined by those

profiles to have WebSphere ESB or IBM Business Process Manager functionality. Likewise, if you have existing WebSphere Enterprise Service Bus profiles, you might want them to have IBM Business Process Manager functionality.

Restrictions:

- You cannot use the Profile Management Tool to augment profiles on IBM Business Process Manager installations on 64-bit architectures except on the Linux on zSeries platform. To augment profiles on other 64-bit architectures, you can use the `manageprofiles` command-line utility. For information about using the `manageprofiles` command-line utility, see Augmenting profiles using the manageprofiles command-line utility. You can also use the Profile Management Tool on these architectures if you use an IBM Business Process Manager 32-bit installation.

Use the instructions in this section and its subsections to augment Process Server and Process Center profiles interactively by using the Profile Management Tool graphical user interface (GUI) or, from a command line, by using the `manageprofiles` command-line utility.

Augmenting profiles using the Profile Management Tool:

Use the Profile Management Tool to augment WebSphere Application Server version 7.0, WebSphere Application Server Network Deployment version 7.0, or WebSphere Enterprise Service Bus version 7.5 profiles into IBM Business Process Manager version 7.5 Process Server profiles.

Ensure that the following prerequisites are satisfied:

- The profile type you will augment to (stand-alone server, deployment manager, or custom) is the same as the type of the profile from which you will augment.
- You have reviewed the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.
- You have shut down any servers associated with the profile you plan to augment.
- If you plan to augment a stand-alone server or custom profile, you ensured that it is *not* federated to a deployment manager.
- Solaris When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons of the Profile Management Tool. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

1. Start the IBM Business Process Manager Profile Management Tool.

   Use one of the following commands:

   - Linux   UNIX *install_root*/**bin/ProfileManagement/pmt.sh**
   - Windows *install_root***bin\ProfileManagement\pmt.bat**

   See the topic Starting the Profile Management Tool for other methods of starting this tool.

   The Welcome page is displayed.

2. In the Welcome page, click the **Launch Profile Management Tool** button or the **Profile Management Tool** tab.

   The **Profiles** tab is displayed.

3. In the **Profiles** tab, highlight the profile you want to augment and click **Augment**.

   The **Profiles** tab lists the profiles that exist on your system. For this procedure, it is assumed you are augmenting an existing profile.

Restrictions:

- You cannot augment WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus version 6.2 profiles into IBM Business Process Manager version 7.0 profiles.

- You cannot augment cell stand-alone server, management administrative agent, management job manager, or secure proxy profiles.

- If you augment a WebSphere Application Server or WebSphere Application Server Network Deployment profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button is cannot be selected unless a profile can be augmented.

  The Augment Selection page opens in a separate window.

4. In the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

   The Profile Augmentation Options page is displayed.

5. In the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.

   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.

   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

6. Before continuing to the next page in the Profile Management Tool, proceed to one of the following topics to configure and complete augmentation of your profile.

Type of profile augmentation you selected	Procedure to complete profile augmentation based on your profile type (stand-alone server, deployment manager, or custom)
Typical	For Process Server profiles: • "Augmenting stand-alone profilesfor Process Server using the Typical option" on page 285 • "Augmenting deployment manager profiles for Process Server using the **Typical** option" on page 314 • "Augmenting custom profiles (managed nodes) for Process Server using the **Typical** option" on page 320 For Process Center profiles: • "Augmenting stand-alone profiles for Process Center using the **Typical** option" on page 326 • "Augmenting Deployment Manager profiles for Process Center using the **Typical** option" on page 344 • "Augmenting custom profiles (managed nodes) for Process Center using the **Typical** option" on page 347

Type of profile augmentation you selected	Procedure to complete profile augmentation based on your profile type (stand-alone server, deployment manager, or custom)
Advanced	For Process Server profiles: • "Augmenting stand-alone profiles for Process Server using the **Advanced** option" on page 295 • "Augmenting deployment manager profiles for Process Server using the **Advanced** option" on page 317 • "Augmenting custom profiles (managed nodes) for Process Server using the **Advanced** option" on page 323 For Process Center profiles: • "Augmenting stand-alone profiles for Process Center using the **Advanced** option" on page 335 • "Augmenting Deployment Manager profiles for Process Center using the **Advanced** option" on page 346 • "Augmenting custom profiles (managed nodes) for Process Center using the **Advanced** option" on page 349

Augmenting profiles for Process Server and WebSphere ESB:

You can use the **Typical** profile augmentation option or the **Advanced** profile augmentation option to augment profiles for Process Server or WebSphere ESB.

Augmenting stand-alone profilesfor Process Server using the Typical option:

Use the **Typical profile augmentation** option of the Profile Management Tool to augment and configure stand-alone profiles for IBM Business Process Manager Process Server. Selecting the **Typical** option augments profiles with default configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.
• Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

This topic assumes that you are using the Profile Management Tool to augment profiles. It is assumed that you have started the Profile Management Tool, have chosen to augment a stand-alone profile for Process Server, and have selected the **Typical profile augmentation** option.

In this type of configuration, the Profile Management Tool performs the following tasks:
• Gives option to deploy the administrative console.
• Sets the Common database configurations to DB2 (if it is not already configured on the profile you are augmenting).
• Configures Business Space using DB2 (if it is not already configured).
• Creates a sample Business Process Choreographer configuration for the profile.

Restriction: If you plan to federate the stand-alone server profile to a deployment manager, do not use the **Typical** option to create it. The default values for messaging engine storage and database type

provided in a **Typical** profile augmentation are not suitable deployment environment installations. Use the **Advanced** option to augment the profile instead. See "Augmenting stand-alone profiles for Process Server using the **Advanced** option" on page 295 for instructions.

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, you are viewing the Administrative Security page. All IBM Business Process Manager profiles have security enabled.

1. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

2. From the Process Server Configuration page, set the values for the following parameters

   Environment name
   Specifies the name of the environment you are configuring.

   Select an environment type

   Options are as follows:
   - Production

     Select **Production** if the server will serve in a production capacity.
   - Stage

     Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.
   - Test

     Select **Test** if the server you are configuring will be used as a testing environment.

   The environment type refers to how the Process Server is used. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Server you are configuring will be accessed and used to review content and new functionality.

   Process Center configuration information
   Configure the Process Center that the Process Server will connect to.

   Set parameters for the following fields:
   - **Use server offline**

     Indicate whether the server you are configuring is an offline server.

     An offline server is a Process Server that is not connected to the Process Center.

     Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.
   - **Protocol**

     Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**

     Type the host or virtual host that this Process Server needs to communicate with Process Center. Use a fully qualified host name.

     In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**

Type the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

You can test the connection to the Process Center by clicking **Test Connection**.

Click **Next**.

3. On the Database Configuration - Part 1 page, perform the following actions: When augmenting a Process Server for IBM Business Process Manager Standard, the **Performance Data Warehouse database name** and **Process server database name** fields do not display. When augmenting a WebSphere ESB profile, the common database name field is hidden.

   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .

   - In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
   - In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
   - In the **Common database name** field, enter a name for the common database or accept the **CMNDB** default value.
   - Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

     If you do not select the checkbox, the scripts are output to the default directory.

   - Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

4. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

   Note: You must complete this page even if you decided not to run the database scripts. The values you choose on the Database Configuration - Part 2 page are added to the database configuration scripts stored in the directory you specified in the **Database script output directory** field on the previous page (or in the default directory for these scripts if you did not specify a different location).

   Restriction: You cannot create a new database if you are using DB2 for z/OS V8 or V9, or Oracle. In these cases, the Process Server / Performance Data Warehouse databases must exist.

   From the following list, select the link that names the database you are using.

   - DB2 Database
   - DB2 for z/OS V8, V9 and V10
   - Microsoft SQL Server
   - Oracle

   a. Set values for the DB2 Database

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 141. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

    b. Set values for the DB2 for z/OS V8, V9 and V10

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 for z/OS V8 and V9 as your database product. You cannot create a new database using these databases. The performance data warehouse database and, for a stand-alone server profile, the process server database, must exist.

Table 142. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of `446` or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

    c. Set values for the Microsoft SQL Server

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 143. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**

Common database	For the Common database, enter values for the following parameters:
	• **User name**
	   Enter the Common database user name.
	• **Password**
	   Enter a password to authenticate with the Common database.
	• **Confirm password**
	   Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	   Enter the Process Server database user name.
	• **Password**
	   Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	   Confirm the password by reentering it.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	   Enter the Performance Data Warehouse database user name.
	• **Password**
	   Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	   Confirm the password by reentering it.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 144. Required database configuration fields for Microsoft SQL Server

Field	Action needed
Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters: • `User name` Enter the Common Event Infrastructure bus messaging engine user name. • `Password` Enter a password to authenticate with the Common Event Infrastructure bus messaging engine. • `Confirm password` Confirm the password by reentering it.
SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters: • `User name` Enter the SCA application bus messaging engine user name. • `Password` Enter a password to authenticate with the SCA application bus messaging engine. • `Confirm password` Confirm the password by reentering it.
SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters: • `User name` Enter the SCA system bus messaging engine user name. • `Password` Enter a password to authenticate with the SCA system bus messaging engine. • `Confirm password` Confirm the password by reentering it.
Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters: • `User name` Enter the Process Server bus messaging engine user name. • `Password` Enter a password to authenticate with the Process Server bus messaging engine. • `Confirm password` Confirm the password by reentering it.

Table 144. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Performance Data Warehouse bus messaging engine user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 145. Required database configuration fields for Oracle

Field	Action needed

Common database	For the Common database, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Common database user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Common database.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Process Server database user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Process Server database.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.
	
	Note: Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 145. Required database configuration fields for Oracle (continued)

Field	Action needed
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name` Enter the Performance Data Warehouse database user name. • `Password` Enter a password to authenticate with the Performance Data Warehouse database. • `Confirm password` Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database cannot be the same.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 146. Required database configuration fields for Oracle

Field	Action needed
Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters: • `User name` Enter the Common Event Infrastructure bus messaging engine user name. • `Password` Enter a password to authenticate with the Common Event Infrastructure bus messaging engine. • `Confirm password` Confirm the password by reentering it.
SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters: • `User name` Enter the SCA application bus messaging engine user name. • `Password` Enter a password to authenticate with the SCA application bus messaging engine. • `Confirm password` Confirm the password by reentering it.

Table 146. Required database configuration fields for Oracle (continued)

Field	Action needed

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

5. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

   • **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   • **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

You have completed one of the following tasks:

• Augmented a WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus profile into an IBM Business Process Manager profile.

- Augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

Check server operation by selecting **Start the server** from the First steps console. An output window opens. If you see a message like the following message, your server is operating properly:

```
ADMU3000I: Server server1 open for e-business; process id is 3348
```

You can also check server operation by running the Installation Verification Test (IVT) from the First steps console or running the **wbi_ivt** command-line utility. This test is to verify that your deployment manager or stand-alone server installation is operating properly. For a Process Server stand-alone server profile, it also runs a System Health check and generates a report.

Augmenting stand-alone profiles for WebSphere ESB using the **Typical** *option:*

Use the **Typical profile augmentation** option of the Profile Management Tool to augment and configure stand-alone server profiles for WebSphere Enterprise Service Bus. Selecting the **Typical** option augments profiles with default configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.
- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

It is assumed that you have started the Profile Management Tool, have chosen to augment a stand-alone profile for WebSphere ESB, and have selected the **Typical profile augmentation** option.

In this type of configuration, the Profile Management Tool performs the following tasks:
- Gives option to deploy the administrative console.
- Sets the Common database configurations to DB2 (if it is not already configured on the profile you are augmenting).
- If you are augmenting a profile that has security enabled, configures Business Space powered by WebSphere using DB2 (if it is not already configured).

Restriction: If you plan to federate the stand-alone server profile to a deployment manager, do not use the **Typical** option to create it. The default values for messaging engine storage and database type provided in a **Typical** profile augmentation are not suitable deployment environment installations. Use the **Advanced** option to augment the profile instead. See "Augmenting stand-alone profiles for WebSphere ESB using the **Advanced** option" on page 305 for instructions.

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, the page that you are viewing depends on the State of security and database on the profile you are augmenting, as describe in the following table:

Table 147. State of security on WebSphere ESB profile and the Profile Management Tool page displayed.

State of security and database on profile	Page displayed	Proceed to . .
The profile you are augmenting for WebSphere ESB has security enabled.	The Administrative Security page	Step 1 on page 295
The profile you are augmenting for WebSphere ESB *does not have security enabled* and you have not yet configured the Common database	The Profile Summary page	Step 2 on page 295

Table 147. State of security on WebSphere ESB profile and the Profile Management Tool page displayed. (continued)

State of security and database on profile	Page displayed	Proceed to . .
The profile you are augmenting for WebSphere ESB *does not have security enabled* and you have configured the Common database.	A password page prompts you for the database user name and password used to configure the databases. Enter the information and click **Next**.	Step 2

1. Enable administrative security

    If you see this page, the profile you are augmenting for WebSphere ESB has security enabled. You must re-enter the administrative user ID and password for that profile.

    If the profile you are augmenting has the WebSphere Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

2. Review Profile summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

    Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

    *   **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
    *   **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

You have augmented a stand-alone profile into a WebSphere ESB stand-alone profile.

The node within the profile has a server named **server1** on Linux, UNIX, and Windows platforms.

Check server operation by selecting **Start the server** from the First steps console. An output window opens. If you see a message like the following message, your server is operating properly:

```
ADMU3000I: Server server1 open for e-business; process id is 3348
```

You can also check server operation by running the Installation Verification Test (IVT) from the First steps console or running the **wbi_ivt** command-line utility. This test is to verify that your deployment manager or stand-alone server installation is operating properly.

Augmenting stand-alone profiles for Process Server using the **Advanced** *option:*

Use the **Advanced profile augmentation** option on the Profile Management Tool graphical user interface (GUI) to augment stand-alone profiles for Process Server. Selecting the **Advanced** option augments profiles with customized configuration settings.

An *IBM BPM Advanced, Process Server stand-alone profile* is a defined server environment that is managed from its own console and functions independently from all other process servers. Before you begin, you should have stopped the server for this profile and launched the Profile Management Tool from your BPM Advanced installation.

This task describes how to use the **Advanced profile augmentation** option on the Profile Management Tool to augment a Stand-alone profile.

By selecting the **Advanced** option, you can perform the following tasks:
- Configure the Common database.
- If you are augmenting a profile that has security enabled, configure Business Space.
- Configure Business Rules Manager.
- If you are augmenting a profile that has security enabled, create a Business Process Choreographer sample configuration.
- Configure the databases using a database design file.

Important: The procedure in this topic includes all pages from the Profile Management Tool that might display when augmenting a stand-alone process server profile using the Advanced option. However, if the profile you are augmenting already includes configured components (for example, the common database or Business Space powered by WebSphere) the pages within the profile management tool for these components will not display.

Use the "Augmenting profiles using the Profile Management Tool" on page 283 procedure to get started with your profile augmentation and then resume with the following steps depending on where you left off.

Remember: All IBM Business Process Manager profiles have administrative security enabled.

1. Using the Profile Management Tool, select the profile you want to augment for Process Server and click **Augment**. The Augment Selection page opens.
2. Select the type of augmentation to apply to the profile and click **Next**. The Profile Augmentation Options page opens.
3. Select **Advanced profile augmentation** and click **Next**. The Administrative Security page opens.
4. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.
5. On the Business Space Configuration page, leave the **Configure Business Space** check box selected to set up Business Space, an integrated user experience for application users across the IBM business process management portfolio. If you want to configure IBM Forms Server to work with Human Task Management widgets in Business Space, select the **Configure IBM Forms Server** check box and enter the HTTP location of the IBM Forms Server translator and IBM Forms Server installation root. Then click **Next**.
6. Select whether to configure a Business Rules Manager for the installation. Business Rules Manager is a Web application that customizes the business rules templates for your business application needs.
7. The next step depends on whether multiple servers are defined on your system and, if not, on whether databases are already configured on your system.

Condition	Next step
• Multiple servers *are* defined on your system.	The Application Scheduler Configuration page is displayed. Proceed to step 8 on page 297.
• Multiple servers are *not* defined on your system. • Databases are *not* already defined on your system.	The Database Design page is displayed. Proceed to step 9 on page 297.
• Multiple servers are *not* defined on your system. • Databases *are* already defined on your system.	A password page asks for the database user name and password used to configure the databases. Enter the information and click **Next**. The Profile Summary page is displayed. Proceed to step 14 on page 304.

8. **For Advanced profile augmentation when the profile has multiple servers defined:** In the Application Scheduler Configuration page, select the server you want from the drop-down list and click **Next**. The next step depends on whether databases are already defined on your system.

Condition of databases	Next step
• Databases are *not* already defined on your system.	The Database Design page is displayed. Proceed to step 9.
• Databases *are* already defined on your system.	A password page asks for the database user name and password used to configure the databases. Enter the information and click **Next**. The Profile Summary page is displayed. Proceed to step 14 on page 304.

9. Optional: Configure the databases using a design file. This option is available for both stand-alone server and deployment manager profiles created using the **Advanced** option.

   a. Select **Use a database design file for database configuration**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. Click **Next**.

   If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

10. From the Process Server Configuration page, set the values for the following parameters.

   Environment name
   Specifies the name of the environment you are configuring.

   Select an environment type

   Options are as follows:
   • Production

      Select **Production** if the server will serve in a production capacity.
   • Stage

      Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.
   • Test

      Select **Test** if the server you are configuring will be used as a testing environment.

   The environment type refers to how the Process Server is used. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Server you are configuring will be accessed and used to review content and new functionality.

   Process Center configuration information
   Configure the Process Center that the Process Server will connect to.

   Set parameters for the following fields:
   • **Use server offline**

      Indicate whether the server you are configuring is an offline server.

      An offline server is a Process Server that is not connected to the Process Center.

      Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.
   • **Protocol**

Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name**

    Type the host or virtual host that this Process Server needs to communicate with Process Center. Use a fully qualified host name.

    In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**

    Type the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

You can test the connection to the Process Center by clicking **Test Connection**.

Click **Next**.

11. On the Database Configuration - Part 1 page, perform the following actions:
    - From the **Select a database product** drop-down, select the database product to be used by the profile.
    - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

        If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

        If the database product you are using with the software already exists, select **Use an existing local or remote database** .

    - In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
    - In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
    - In the **Common database name** field, enter a name for the common database or accept the **CMNDB** default value.
    - Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

        If you do not select the checkbox, the scripts are output to the default directory.

    - Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

12. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

    In the Database Configuration - Part 2 page, complete the configuration of the database you selected.

    Configuration parameters for all databases are listed in the sub-steps that follow:

    - For a listing of DB2 parameter definitions, click here
    - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
    - For a listing of Microsoft SQL Server parameter definitions, click here
    - For a listing of Oracle parameter definitions, click here

    a. Set values for the DB2 Database

        The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 148. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

b. Set values for the DB2 Universal Database for z/OS

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 149. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of `446` or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 150. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**

Common database	For the Common database, enter values for the following parameters:
	
	• **User name**
	  Enter the Common database user name.
	• **Password**
	  Enter a password to authenticate with the Common database.
	• **Confirm password**
	  Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	  Confirm the password by reentering it.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	  Confirm the password by reentering it.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 151. Required database configuration fields for Microsoft SQL Server

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the Common Event Infrastructure bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the SCA application bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the SCA application bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

Table 151. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• `User name`
	   Enter the Performance Data Warehouse bus messaging engine user name.
	• `Password`
	   Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• `Confirm password`
	   Confirm the password by reentering it.

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 152. Required database configuration fields for Oracle

Field	Action needed

Common database	For the Common database, enter values for the following parameters:
	• `User name`
	   Enter the Common database user name.
	• `Password`
	   Enter a password to authenticate with the Common database.
	• `Confirm password`
	   Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	   Enter the Process Server database user name.
	• `Password`
	   Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	   Confirm the password by reentering it.
	Note: Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 152. Required database configuration fields for Oracle (continued)

Field	Action needed

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	
	• `Confirm password`
	  Confirm the password by reentering it.
	
	Note: The Performance Data Warehouse database user name and the Process Server database cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 153. Required database configuration fields for Oracle

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the Common Event Infrastructure bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the SCA application bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the SCA application bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

Table 153. Required database configuration fields for Oracle (continued)

Field	Action needed

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

13. (**Note**: This step applies to DB2 and DB2 Universal Database for z/OS environments only) In the Business Process Choreographer Configuration, select whether to create a sample Business Process Choreographer configuration.

14. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

    Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

    • **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.

    • **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

15. Complete the Process Server stand-alone profile configuration by performing one of the following tasks, depending on whether you chose to postpone actual database configuration by producing scripts to be run manually.

    - If you completed configuration of the common database, Performance Data Warehouse database and the Process Server database using the Profile Management Tool, ensure **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.
    - If you will be using the Common Event Infrastructure component, you need to manually create its databases. See Configuring a Common Event Infrastructure (CEI) database.
    - If you chose to postpone actual database configuration by producing scripts to be run manually, perform the following steps:

        a. Clear the check box beside **Launch the First steps console** and click **Finish** to close the Profile Management Tool. Also, close the Profiles page, which is open in a separate window.

        b. Use your site's standard database definition tools and procedures to edit and run the scripts that the Profile Management Tool generated to create, or create and configure the **CMNDB** databases. Also see the topics that describe manually creating new databases or new tables in existing databases:

            – For the Common Event Infrastructure database: Configuring the event database and its subtopics.

            – For the Common database: Creating the Common database and tables after profile creation or augmentation.

        When the databases are configured, start the First steps console associated with the profile.

16. If you plan to use the Business Process Choreographer component in your environment, you might need your database administrator to create and configure the Business Process Choreographer database.

    For more information, see the topics under Configuring Business Process Choreographer.

You have completed one of the following tasks:

- Augmented a WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus profile into an IBM Business Process Manager profile.
- Augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

Check server operation by selecting **Start the server** from the First steps console. An output window opens. If you see a message like the following message, your server is operating properly:

```
ADMU3000I: Server server1 open for e-business; process id is 3348
```

You can also check server operation by running the Installation Verification Test (IVT) from the First steps console or running the **wbi_ivt** command-line utility. This test is to verify that your deployment manager or stand-alone server installation is operating properly. For a Process Server stand-alone server profile, it also runs a System Health check and generates a report.

Augmenting stand-alone profiles for WebSphere ESB using the **Advanced** *option:*

Use the **Advanced profile augmentation** option of the Profile Management Tool to augment and configure stand-alone server profiles for WebSphere Enterprise Service Bus. Selecting the **Advanced** option augments profiles with customized configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

It is assumed that you have started the Profile Management Tool, have chosen to augment a stand-alone profile for WebSphere ESB, and have selected the **Advanced profile augmentation** option.

By selecting the **Advanced** option, you can perform the following tasks:
- Configure the common database.
- If you are augmenting a profile that has security enabled, lets you enable administrative security on the WebSphere Enterprise Service Bus profile you are creating.
- If you are augmenting a profile that has security enabled, configure Business Space powered by WebSphere using DB2 Express.
- Sets the Common database configurations to DB2 (if it is not already configured on the profile you are augmenting).
- If you are augmenting a profile that has security enabled, configures Business Space powered by WebSphere using DB2 (if it is not already configured).
- Configure the databases using a database design file.

Important: The procedure in this topic includes all pages from the Profile Management Tool that might display when augmenting a stand-alone profile for WebSphere ESB using the **Advanced** option. However, if the profile you are augmenting already includes configured components (for example, the common database or Business Space powered by WebSphere) the pages within the profile management tool for these components will not display.

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, the page that you are viewing depends on the State of security and database on the profile you are augmenting, as describe in the following table:

Table 154. State of security on WebSphere ESB profile and the Profile Management Tool page displayed.

Profile type you are augmenting to and security status of existing profile you are augmenting	Page displayed	Proceed to . .
• WebSphere ESB profile • Security enabled.	The Administrative Security page	Step 1
• WebSphere ESB profile • Security not enabled.	Business Space Configuration page	Step 2

1. Enable administrative security

   If you see this page, the profile you are augmenting for WebSphere ESB has security enabled. You must re-enter the administrative user ID and password for that profile.

   If the profile you are augmenting has the WebSphere Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

2. On the Business Space Configuration page, select the **Configure Business Space** check box to set up Business Space powered by WebSphere, an integrated user experience for application users across the IBM business process management portfolio. If you want to configure IBM Forms Server to work with Human Task Management widgets in Business Space, select the **Configure IBM Forms Server** check box and enter the Webform Server translator and installation root.

   Note: Business Space is supported with the following database products:
   - DB2 Express
   - DB2® Universal

- DB2 for z/OS®
- Oracle
- Microsoft SQL Server

If the database you use for WebSphere ESB does not match the supported databases for Business Space, DB2 Express is selected for the Business Space configuration.

3. Optional: Configure the databases using a design file. This option is available for both stand-alone server and deployment manager profiles created using the **Advanced** option.

   a. Select **Use a database design file for database configuration**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. Click **Next**.

   If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration. For more information on using a design file for database configuration, see Creating database design files using the database design tool.

4. In the Database Configuration page, configure the database used by selected WebSphere Enterprise Bus components.

   The rest of the Database configuration parameters (for all supported databases) are listed on subsequent Database Configuration pages and are described in the sub-steps that follow:

   - For a listing of DB2 parameter definitions, click here
   - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
   - For a listing of Microsoft SQL Server parameter definitions, click here
   - For a listing of Oracle parameter definitions, click here

   a. Set values for the DB2 Database

   The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 155. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

   b. Set values for the DB2 Universal Database for z/OS

   The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a

new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 156. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of 446 or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 157. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**

Common database	For the Common database, enter values for the following parameters:
	• `User name`
	  Enter the Common database user name.
	• `Password`
	  Enter a password to authenticate with the Common database.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 157. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password by reentering it.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 158. Required database configuration fields for Microsoft SQL Server

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the Common Event Infrastructure bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the SCA application bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA application bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 158. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 159. Required database configuration fields for Oracle

Field	Action needed

Common database	For the Common database, enter values for the following parameters:
	
	• `User name`
	
	  Enter the Common database user name.
	
	• `Password`
	
	  Enter a password to authenticate with the Common database.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	
	• `User name`
	
	  Enter the Process Server database user name.
	
	• `Password`
	
	  Enter a password to authenticate with the Process Server database.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.
	
	Note: Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	• `User name`
	
	  Enter the Performance Data Warehouse database user name.
	
	• `Password`
	
	  Enter a password to authenticate with the Performance Data Warehouse database.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.
	
	Note: The Performance Data Warehouse database user name and the Process Server database cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 160. Required database configuration fields for Oracle

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	
	• `User name`
	
	  Enter the Common Event Infrastructure bus messaging engine user name.
	
	• `Password`
	
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	
	• `User name`
	
	  Enter the SCA application bus messaging engine user name.
	
	• `Password`
	
	  Enter a password to authenticate with the SCA application bus messaging engine.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	
	• `User name`
	
	  Enter the SCA system bus messaging engine user name.
	
	• `Password`
	
	  Enter a password to authenticate with the SCA system bus messaging engine.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	
	• `User name`
	
	  Enter the Process Server bus messaging engine user name.
	
	• `Password`
	
	  Enter a password to authenticate with the Process Server bus messaging engine.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

Table 160. Required database configuration fields for Oracle (continued)

Field	Action needed
Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters: • `User name` Enter the Performance Data Warehouse bus messaging engine user name. • `Password` Enter a password to authenticate with the Performance Data Warehouse bus messaging engine. • `Confirm password` Confirm the password by reentering it.

    The Profile Summary page is displayed.

5. Review Profile summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

   • **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.

   • **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

6. Complete the stand-alone profile configuration by performing one of the following tasks, depending on whether you must manually configure the Common Event Infrastructure and Common databases.

   • If you completed configuration of the common database using the Profile Management Tool, ensure **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.

   • If you will be using the Common Event Infrastructure component, you need to manually create its databases. See Configuring a Common Event Infrastructure (CEI) database.

   • If you chose to postpone actual database configuration by producing scripts to be run manually, perform the following steps:

     a. Clear the check box beside **Launch the First steps console** and click **Finish** to close the Profile Management Tool. Also, close the Profiles page, which is open in a separate window.

     b. Use your site's standard database definition tools and procedures to edit and run the scripts the Profile Management Tool generated to create, or create and configure the **CMNDB** databases. Also see the topics that describe manually creating new databases or new tables in existing databases

     c. When the databases are configured, start the First steps console associated with the profile, as described in topics/tins_bpm_ps_start_firststeps.dita.

You have augmented a stand-alone profile into a WebSphere ESB stand-alone profile.

The node within the profile has a server named **server1** on Linux, UNIX, and Windows platforms.

Check server operation by selecting **Start the server** from the First steps console. An output window opens. If you see a message like the following message, your server is operating properly:

```
ADMU3000I: Server server1 open for e-business; process id is 3348
```

You can also check server operation by running the Installation Verification Test (IVT) from the First steps console or running the **wbi_ivt** command-line utility. This test is to verify that your deployment manager or stand-alone server installation is operating properly.

Augmenting deployment manager profiles for Process Server using the **Typical** *option:*

Use the **Typical profile augmentation** option on the Profile Management Tool graphical user interface (GUI) to augment and configure a deployment manager profile for Process Server or WebSphere Enterprise Service Bus. Selecting the **Typical** option augments profiles with default configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

- ◼ Solaris ◼ When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/ .Xdefaults file:

  ```
  Eclipse*spacing:0
  Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
  ```

  After adding the lines, run the following command before starting the Profile Management Tool:

  ```
  xrdb -load user_home/.Xdefaults
  ```

This topic assumes that you are using the Profile Management Tool to augment profiles. As a result, it is assumed that you have started the Profile Management Tool, have chosen to augment a deployment manager profile for Process Server and have selected the **Typical profile augmentation** option.

The task describes the procedure for augmenting a deployment manager profile for Process Server using the **Typical** augmentation option. The **Typical** augmentation using the **Typical** augmentation option. The **Typical** augmentation option sets the Common database configuration to DB2 (if it is not already configured on the profile you are augmenting).

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, you are viewing the Administrative Security page. All IBM Business Process Manager profiles have security enabled.

1. Enable administrative security

   From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

2. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

- **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
- **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.

4. If you plan to use the Business Process Choreographer component in your environment, you must configure it. You might need your database administrator to create and configure the Business Process Choreographer database.

    For more information, see the topics under Configuring Business Process Choreographer.

You have completed one of the following tasks:

- Augmented a WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus profile into an IBM Business Process Manager profile.
- Augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

The node defined by the profile has a deployment manager named **Dmgr**.

Check the server operation by selecting **Start the deployment manager** from the First steps console. An output window opens. If you see a message like the following one, your deployment manager is operating properly:

```
 ADMU3000I: Server dmgr open for e-business; process id is 3072
```

In a deployment environment, you must create and configure other databases, create custom profiles, and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

For more information about planning your installation, see the topics in the *Planning* section of the Installing PDF. To learn more about the databases required by IBM BPM Advanced, see the topics under *Configuring IBM Process Server > Configuring databases* in the *Installing and Configuring IBM Business Process Manager for Multiplatforms, version 7.0* PDF. Alternatively, view the topics in the .

Augmenting deployment manager profiles for WebSphere ESB using the **Typical** *option:*

Use the **Typical profile augmentation** option on the Profile Management Tool graphical user interface (GUI) to augment and configure a deployment manager profile for WebSphere ESB. Selecting the **Typical** option augments profiles with default configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

In this type of configuration, the Profile Management Tool performs the following tasks:

- If you are augmenting a profile that has security enabled, lets you enable administrative security on the profile you are augmenting for WebSphere ESB.
- Sets the Common database configuration to DB2 Express (if it is not already configured on the profile you are augmenting).

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, the page that you are viewing depends on the State of security and database on the profile you are augmenting, as describe in the following table:

Table 161. State of security on profile and the Profile Management Tool page displayed.

State of security and database on profile	Page displayed	Proceed to . .
The profile you are augmenting for WebSphere ESB has security enabled.	The Administrative Security page	Step 1
The profile you are augmenting for WebSphere ESB *does not have security enabled*	The Profile Summary page	Step 2

1. Enable administrative security

   If you see this page, the profile you are augmenting for WebSphere ESB has security enabled. You must re-enter the administrative user ID and password for that profile.

   If the profile you are augmenting has the WebSphere Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

2. Review Profile summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click Finish to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

The node defined by the profile has a deployment manager named **dmgr**.

Check the server operation by selecting **Start the deployment manager** from the First steps console. An output window opens. If you see a message like the following one, your deployment manager is operating properly:

```
ADMU3000I: Server dmgr open for e-business; process id is 3072
```

In a deployment environment, you must create and configure other databases, create custom profiles, and federate them to your deployment manager, create servers, create clusters if you want workload

management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

For more information about planning your installation, see the topics in the *Planning* section of the Installing PDF. To learn more about the databases required by IBM BPM Advanced, see the topics under *Configuring IBM Process Server > Configuring databases* in the *Installing and Configuring IBM Business Process Manager for Multiplatforms, version 7.0* PDF. Alternatively, view the topics in the .

Augmenting deployment manager profiles for Process Server using the **Advanced** *option:*

Use the **Advanced profile creation** option on the Profile Management Tool graphical user interface (GUI) to augment and configure a deployment manager profile for Process Server or WebSphere Enterprise Service Bus. Selecting the **Advanced** option augments profiles with customized configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

- ▊ Solaris ▊ When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/ `.Xdefaults` file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The task describes the procedure for augmenting a deployment manager profile for Process Server using the **Advanced** augmentation option.

By selecting the **Advanced** option, you can perform the following tasks:
- Configure the Common database.
- Configure the database using a database design file.

Important: The procedure in this topic outlines all the pages available in the Profile Management Tool to configure a deployment manager profile using the **Advanced** option. If a particular component, such as the Common database, is already configured on the profile you are augmenting, the configuration page for that component will not appear.

For augmentation on a profile from an IBM BPM configuration (Advanced, Standard or Express), and as a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, you are viewing the Administrative Security page.

For augmentation being performed on a WebSphere ESB profile, and as a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, the page that you are viewing depends on the State of security and database on profile you are augmenting, as describe in the following table:

Table 162. State of security on WebSphere ESB profile and the Profile Management Tool page displayed.

State of security and database on profile	Page displayed	Proceed to . .
The WebSphere ESB profile you are augmenting has security enabled.	The Administrative Security page	Step 1
The WebSphere ESB profile you are augmenting *does not have security enabled* and you have not yet configured the Common database	The Database Design page	
The WebSphere ESB profile you are augmenting *does not have security enabled* and you have configured the Common database.	The database password page	

1. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If you see the Administrative Security page, it means that the profile you are augmenting has security enabled. You must reenter the administrative user ID and password for that profile.

2. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

3. Optional: Configure the database using a design file. This option is available for both Advanced stand-alone server and Advanced deployment manager profiles.

   a. Select **Use a database design file for database configuration**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. Click **Next**.

   If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

4. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

You have completed one of the following tasks:

- Augmented a WebSphere Application Server, Application Server Network Deployment, or WebSphere ESB profile into an IBM Business Process Manager profile.
- Augmented a WebSphere Application Server or Application Server Network Deployment profile into a WebSphere ESB profile.

Check server operation by selecting **Start the deployment manager** from the First steps console. An output window opens. If you see a message like the following one, your deployment manager is operating properly:

```
ADMU3000I: Server dmgr open for e-business; process id is 3072
```

In a deployment environment, you must create and configure other databases, create custom profiles, and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

For more information about planning your installation, see the topics in the planning section of the *Installation, version 7.5* PDF. To learn more about the databases required by IBM BPM Advanced, see the topics under *Configuring IBM Process Server > Configuring databases* in the *Installing and Configuring IBM BPM Advanced version 7.5* PDF. Alternatively, view the topics in the .

Augmenting deployment manager profiles for WebSphere ESB using the **Advanced** *option:*

Use the **Advanced profile creation** option on the Profile Management Tool graphical user interface (GUI) to augment and configure deployment manager profiles for WebSphere Enterprise Service Bus. Selecting the **Advanced** option augments profiles with customized configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

* Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

* Solaris When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/ `.Xdefaults` file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The task describes the procedure for augmenting a deployment manager profile for WebSphere ESB using the **Advanced** augmentation option.

By selecting the **Advanced** option, you can perform the following tasks:
* Configure the Common database.
* Configure the database using a database design file.

Important: The procedure in this topic outlines all the pages available in the Profile Management Tool to configure a deployment manager profile using the **Advanced** option. If a particular component, such as the Common database, is already configured on the profile you are augmenting, the configuration page for that component will not appear.

After following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, the page that you are viewing depends on the State of security and database on profile you are augmenting, as describe in the following table:

Table 163. State of security on profile and the Profile Management Tool page displayed.

State of security and database on profile	Page displayed	Proceed to . .
The profile you are augmenting for WebSphere ESB has security enabled.	The Administrative Security page	Step 1
The profile you are augmenting for WebSphere ESB *does not have security enabled*	The Database Design page	Step 3

1. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If you see the Administrative Security page, it means that the profile you are augmenting has security enabled. You must reenter the administrative user ID and password for that profile.

2. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

3. Optional: Configure the database using a design file. This option is available for both Advanced stand-alone server and Advanced deployment manager profiles.

   a. Select **Use a database design file for database configuration**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. Click **Next**.

   If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

4. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

   • **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.

   • **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

You have augmented a WebSphere Application Server or Application Server Network Deployment profile into a WebSphere ESB profile.

Augmenting custom profiles (managed nodes) for Process Server using the **Typical** *option:*

Use the **Typical** augmentation option on the Profile Management Tool to augment and configure WebSphere Application Server version 7.0, WebSphere Application Server Network Deployment version 7.0, or WebSphere Enterprise Service Bus version 7.0 custom profiles (managed nodes) into Process Server profiles. Selecting the **Typical** option augments profiles with default configuration settings.

You have started the Profile Management Tool, have chosen to augment a custom profile, and have selected the **Typical** profile augmentation option.

In this type of configuration, you can choose to federate the node to an existing deployment manager during the augmentation process, or federate it later using the **addNode** command. If you decide to federate the profile during the augmentation process, the tool sets the Common database configuration to the same database as the deployment manager. If you decide not to federate, the database configuration is left unconfigured.

1. In the Federation page, choose to federate the node into the deployment manager now as part of the profile augmentation, or at a later time and apart from profile augmentation.
    - If you choose to federate the node as part of the profile augmentation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if administrative security is enabled on the deployment manager. Leave the **Federate this node later** check box deselected. Then click **Next**.

      The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

      Attention: Federate the custom node during profile augmentation only if all the following conditions are true:
        – You do not plan to use this custom node as a migration target.
        – No other node is being federated. (Node federation must be serialized.)
        – The deployment manager is running.
        – The deployment manager is an IBM Business Process Manager deployment manager. IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM Business Process Manager deployment manager.
        – The deployment manager is at a release level the same or higher than the release level of the custom profile you are augmenting.
        – The deployment manager has a JMX administrative port enabled. The default protocol is SOAP. (Click **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

      If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.
    - If you choose to federate the node at a later time and apart from profile augmentation, select the **Federate this node later** check box and click **Next**.

    The Profile Summary page is displayed.
2. In the Profile Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   When the profile augmentation is complete, the Profile Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might appear in place of the success message, for example:
    - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
    - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

You have completed one of the following tasks:
- Augmented a WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus profile into an IBM Business Process Manager profile.
- Augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

If you did not federate the profile during profile augmentation, federate it now. The node within the profile is empty until you federate the node and use the deployment manager to customize the node.

Augmenting a custom (managed node) profiles for WebSphere ESB using the Typical option:

Use the **Typical** augmentation option on the Profile Management Tool to augment and configure WebSphere Application Server version 7.0 or WebSphere Application Server Network Deployment version 7.0 profiles into WebSphere Enterprise Service Bus profiles. Selecting the **Typical** option augments profiles with default configuration settings.

You have started the Profile Management Tool, have chosen to augment a custom profile, and have selected the **Typical** profile augmentation option.

In this type of configuration, you can choose to federate the node to an existing deployment manager during the augmentation process, or federate it later using the **addNode** command. If you decide to federate the profile during the augmentation process, the tool sets the Common database configuration to the same database as the deployment manager. If you decide not to federate, the database configuration is left unconfigured.

1. In the Federation page, choose to federate the node into the deployment manager now as part of the profile augmentation, or at a later time and apart from profile augmentation.
   - If you choose to federate the node as part of the profile augmentation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if administrative security is enabled on the deployment manager. Leave the **Federate this node later** check box deselected. Then click **Next**.

     The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

Attention: Federate the custom node during profile augmentation only if all the following conditions are true:

– You do not plan to use this custom node as a migration target.

– No other node is being federated. (Node federation must be serialized.)

– The deployment manager is running.

– The deployment manager is an IBM Business Process Manager deployment manager. IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM Business Process Manager deployment manager.

– The deployment manager is at a release level the same or higher than the release level of the custom profile you are augmenting.

– The deployment manager has a JMX administrative port enabled. The default protocol is SOAP. (Click **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.

• If you choose to federate the node at a later time and apart from profile augmentation, select the **Federate this node later** check box and click **Next**.

The Profile Summary page is displayed.

2. In the Profile Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

When the profile augmentation is complete, the Profile Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

Attention: If errors are detected during profile augmentation, other messages might appear in place of the success message, for example:

• **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.

• **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

If you did not federate the profile during profile augmentation, federate it now. The node within the profile is empty until you federate the node and use the deployment manager to customize the node.

Augmenting custom profiles (managed nodes) for Process Server using the **Advanced** *option:*

Use the **Advanced** augmentation option on the Profile Management Tool to augment and configure WebSphere Application Server version 7.0, WebSphere Application Server Network Deployment version 7.0, or WebSphere Enterprise Service Bus version 7.0 custom profiles (managed nodes) into Process Server profiles. Selecting the **Advanced** option lets you customize the augmentation and configuration settings.

You have started the Profile Management Tool, have chosen to augment a custom profile, and have selected the **Advanced** profile augmentation option.

While augmenting custom profiles, you can choose to federate the node to an existing deployment manager during the augmentation process, or federate it later using the **addNode** command.

1. In the Federation page, choose to federate the node into the deployment manager now as part of the profile augmentation, or at a later time and apart from profile augmentation.

   - If you choose to federate the node as part of the profile augmentation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if administrative security is enabled on the deployment manager. Leave the **Federate this node later** check box deselected. Then click **Next**.

     The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

     Attention: Federate the custom node during profile augmentation only if all the following conditions are true:

     – You do not plan to use this custom node as a migration target.

     – No other node is being federated. (Node federation must be serialized.)

     – The deployment manager is running.

     – The deployment manager is an IBM Business Process Manager deployment manager. IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM Business Process Manager deployment manager.

     – The deployment manager is at a release level the same or higher than the release level of the custom profile you are augmenting.

     – The deployment manager has a JMX administrative port enabled. The default protocol is SOAP. (Click **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

     – If the managed node you are augmenting has already been federated to a deployment manager profile, when augmenting this custom profile, the dmgr profile must be running. Additionally, specify the host name or IP address and SOAP port of the deployment manager to make sure the federated node is augmented.

     If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.

   - If you choose to federate the node at a later time and apart from profile augmentation, select the **Federate this node later** check box and click **Next**.

   The Profile Summary page is displayed.

2. In the Profile Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   When the profile augmentation is complete, the Profile Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.

   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

You have completed one of the following tasks:

- Augmented a WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus profile into an IBM Business Process Manager profile.
- Augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

If you did not federate the profile during profile augmentation, federate it now. The node within the profile is empty until you federate the node and use the deployment manager to customize the node.

Augmenting a custom (managed node) profiles for WebSphere ESB using the Advanced option:

Use the **Advanced** augmentation option on the Profile Management Tool to augment and configure WebSphere Application Server version 7.0 or WebSphere Application Server Network Deployment version 7.0 profiles into WebSphere Enterprise Service Bus profiles. Selecting the **Advanced** option lets you customize the augmentation and configuration settings.

You have started the Profile Management Tool, have chosen to augment a custom profile, and have selected the **Advanced** profile augmentation option.

While augmenting custom profiles, you can choose to federate the node to an existing deployment manager during the augmentation process, or federate it later using the **addNode** command.

1. In the Federation page, choose to federate the node into the deployment manager now as part of the profile augmentation, or at a later time and apart from profile augmentation.

   - If you choose to federate the node as part of the profile augmentation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if administrative security is enabled on the deployment manager. Leave the **Federate this node later** check box deselected. Then click **Next**.

     The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

     Attention: Federate the custom node during profile augmentation only if all the following conditions are true:
     – You do not plan to use this custom node as a migration target.
     – No other node is being federated. (Node federation must be serialized.)
     – The deployment manager is running.
     – The deployment manager is an IBM Business Process Manager deployment manager. IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM Business Process Manager deployment manager.
     – The deployment manager is at a release level the same or higher than the release level of the custom profile you are augmenting.
     – The deployment manager has a JMX administrative port enabled. The default protocol is SOAP. (Click **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)
     – If the managed node you are augmenting has already been federated to a deployment manager profile, when augmenting this custom profile, the dmgr profile must be running. Additionally, specify the host name or IP address and SOAP port of the deployment manager to make sure the federated node is augmented.

     If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.

- If you choose to federate the node at a later time and apart from profile augmentation, select the **Federate this node later** check box and click **Next**.

  The Profile Summary page is displayed.

2. In the Profile Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   When the profile augmentation is complete, the Profile Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

If you did not federate the profile during profile augmentation, federate it now. The node within the profile is empty until you federate the node and use the deployment manager to customize the node.

Augmenting profiles for Process Center:

You can use the **Typical** profile augmentation option or the **Advanced** profile augmentation option to augment profiles for Process Center.

*Augmenting stand-alone profiles for Process Center using the **Typical** option:*

Use the Profile Management Tool to augment stand-alone profiles for Process Center.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.
- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

- Solaris When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

Use the procedure in this task topic if you are:
- Augmenting a stand-alone server profile for *Process Center*.

The steps describe **Typical profile augmentation**.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - `Linux` `UNIX` *install_root*/**bin/ProfileManagement/pmt.sh**

   - `Windows` *install_root***bin\ProfileManagement\pmt.bat**

   The Welcome page displays.

2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab contains a list of profiles on your machine currently. For this procedure, it is assumed you are augmenting an existing stand-alone profile for Process Center. For instructions on creating a new Process Center profile, see "Creating Process Center stand-alone profiles using the Profile Management Tool" on page 204

   Restrictions:
   - You cannot augment WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus version 6.2 profiles into IBM Business Process Manager version 7.0 profiles.
   - You cannot augment cell stand-alone server, management administrative agent, management job manager, or secure proxy profiles.
   - If you augment a WebSphere Application Server or WebSphere Application Server Network Deployment profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented.

   The Augment Selection page opens in a separate window.

3. In the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**

   The Profile Augmentation Options page displays.

   From the Profile Augmentation Options page, select the profile augmentation method to apply. The following options are available:
   - **Typical profile augmentation**

     Augments a profile with default configuration settings.
   - **Advanced profile augmentation**

     Lets you specify your own configuration values for the profile you are augmenting.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

4. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

5. On the Business Space Configuration page, leave the **Configure Business Space** check box selected to set up Business Space, an integrated user experience for application users across the IBM business process management portfolio. If you want to configure IBM Forms Server to work with Human

Task Management widgets in Business Space, select the **Configure IBM Forms Server** check box and enter the HTTP location of the IBM Forms Server translator and IBM Forms Server installation root. Then click **Next**.

If you are augmenting a WebSphere ESB profile, theBusiness Space Configuration page does not display.

6. Select whether to configure a Business Rules Manager for the installation.

   Business Rules Manager is a Web application that customizes the business rules templates for your business application needs.

   Click **Next**.

7. Select the configuration settings for the Performance Data Warehouse.

   To configure performance data warehouse functionality for the profile, select the **Configure Performance Data Warehouse** checkbox.

8. Configure the databases using a design file. **Option is for the Advanced path only.**

   a. Select **Use a database design file** .

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

   e. Click **Next**.

   If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

9. On the Database Configuration - Part 1 page, perform the following actions:

   • From the **Select a database product** drop-down, select the database product to be used by the profile.

   • Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .

   • In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.

   • In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.

   • In the **Common database name** field, enter a name for the common database or accept the **CMNDB** default value.

   • Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

     If you do not select the checkbox, the scripts are output to the default directory.

   • Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

10. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

Note: You must complete this page even if you decided not to run the database scripts. The values you choose on the Database Configuration - Part 2 page are added to the database configuration scripts stored in the directory you specified in the **Database script output directory** field on the previous page (or in the default directory for these scripts if you did not specify a different location).

Restriction: You cannot create a new database if you are using DB2 for z/OS V8 or V9, or Oracle. In these cases, the Process Server / Performance Data Warehouse databases must exist.
From the following list, select the link that names the database you are using.

- DB2 Database
- DB2 for z/OS V8, V9 and V10
- Microsoft SQL Server
- Oracle

a. Set values for the DB2 Database

   The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 164. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

b. Set values for the DB2 for z/OS V8, V9 and V10

   The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 for z/OS V8 and V9 as your database product. You cannot create a new database using these databases. The performance data warehouse database and, for a stand-alone server profile, the process server database, must exist.

Table 165. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.

Table 165. Required database configuration fields for DB2 Universal Database for z/OS (continued)

Field	Action needed
Server port	Accept the default value of 446 or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

   c. Set values for the Microsoft SQL Server

   The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 166. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**

Common database	For the Common database, enter values for the following parameters:
	• `User name`
	  Enter the Common database user name.
	• `Password`
	  Enter a password to authenticate with the Common database.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	  Confirm the password by reentering it.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 166. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\ SQLServer`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 167. Required database configuration fields for Microsoft SQL Server

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Common Event Infrastructure bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA application bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA application bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Field	Action needed

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

    d. Set values for the Oracle database

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

       Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 168. Required database configuration fields for Oracle

Field	Action needed

Common database	For the Common database, enter values for the following parameters:
	• `User name`
	  Enter the Common database user name.
	• `Password`
	  Enter a password to authenticate with the Common database.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 168. Required database configuration fields for Oracle (continued)

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	• `User name`
	  Enter the Process Server database user name.
	
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	
	• `Confirm password`
	  Confirm the password by reentering it.
	
	Note: Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	
	• `Confirm password`
	  Confirm the password by reentering it.
	
	Note: The Performance Data Warehouse database user name and the Process Server database cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 169. Required database configuration fields for Oracle

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the Common Event Infrastructure bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

Table 169. Required database configuration fields for Oracle (continued)

Field	Action needed

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA application bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA application bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

11. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

    Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

- **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
- **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

Augmenting stand-alone profiles for Process Center using the **Advanced** *option:*

Use the **Advanced profile augmentation** option on the Profile Management Tool graphical user interface (GUI) to augment stand-alone profiles for Process Center. Selecting the **Advanced** option augments profiles with customized configuration settings.

An *IBM BPM Advanced, Process Center stand-alone profile* is a defined server environment that is managed from its own console and functions independently from all other process centers.

This task describes how to use the **Advanced profile augmentation** option on the Profile Management Tool to augment a Stand-alone profile.

By selecting the **Advanced** option, you can perform the following tasks:
- Configure the Common database.
- If you are augmenting a profile that has security enabled, configure Business Space.
- Configure Business Rules Manager.
- If you are augmenting a profile that has security enabled, create a Business Process Choreographer sample configuration.
- Configure the databases using a database design file.

Important: The procedure in this topic includes all pages from the Profile Management Tool that might display when augmenting a stand-alone process server profile using the Advanced option. However, if the profile you are augmenting already includes configured components (for example, the common database or Business Space powered by WebSphere) the pages within the profile management tool for these components will not display.

Use the "Augmenting profiles using the Profile Management Tool" on page 283 procedure to get started with your profile augmentation and then resume with the following steps depending on where you left off.

Remember: All IBM Business Process Manager profiles have administrative security enabled.
1. Using the Profile Management Tool, select the profile you want to augment for Process Center and click **Augment**. The Augment Selection page opens.
2. Select the type of augmentation to apply to the profile and click **Next**. The Profile Augmentation Options page opens.
3. Select **Advanced profile augmentation** and click **Next**. The Administrative Security page opens.
4. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.
5. On the Business Space Configuration page, leave the **Configure Business Space** check box selected to set up Business Space, an integrated user experience for application users across the IBM business process management portfolio. If you want to configure IBM Forms Server to work with Human Task Management widgets in Business Space, select the **Configure IBM Forms Server** check box and enter the HTTP location of the IBM Forms Server translator and IBM Forms Server installation root. Then click **Next**.

6. Select whether to configure a Business Rules Manager for the installation. Business Rules Manager is a Web application that customizes the business rules templates for your business application needs.

The next step depends on whether multiple servers are defined on your system and, if not, on whether databases are already configured on your system.

Condition	Next step
• Multiple servers *are* defined on your system.	The Application Scheduler Configuration page is displayed. Proceed to step 7.
• Multiple servers are *not* defined on your system. • Databases are *not* already defined on your system.	The Database Design page is displayed. Proceed to step 8.
• Multiple servers are *not* defined on your system. • Databases *are* already defined on your system.	A password page asks for the database user name and password used to configure the databases. Enter the information and click **Next**. The Profile Summary page is displayed. Proceed to step 12 on page 343.

7. **For Advanced profile augmentation when profile has multiple servers defined:** In the Application Scheduler Configuration page, select the server you want from the drop-down list and click **Next**. The next step depends on whether databases are already defined on your system.

Condition of databases	Next step
• Databases are *not* already defined on your system.	The Database Design page is displayed. Proceed to step 8.
• Databases *are* already defined on your system.	A password page asks for the database user name and password used to configure the databases. Enter the information and click **Next**. The Profile Summary page is displayed. Proceed to step 12 on page 343.

8. Optional: Configure the databases using a design file. This option is available for both stand-alone server and deployment manager profiles created using the **Advanced** option.

   Note: Using a database design file is not recommended for IBM BPM Express configurations.
   a. Select **Use a database design file for database configuration**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. Click **Next**.

   If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

9. From the Process Center Configuration page, set the values for the following parameters.

   Environment name
   Specifies the name of the environment you are configuring.

   Select an environment type

   Options are as follows:
   • Production
     Select **Production** if the server will serve in a production capacity.
   • Stage
     Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.
   • Test
     Select **Test** if the server you are configuring will be used as a testing environment.

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The environment type refers to how the Process Center is used. For example, in what capacity will the Process Center be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Center you are configuring will be accessed and used to review content and new functionality.

Process Center configuration information

Configure the Process Server that the Process Center will connect to.

Set parameters for the following fields:

- **Use server offline**

  Indicate whether the server you are configuring is an offline server.

  An offline server is a Process Server that is not connected to the Process Center.

  Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Server.

- **Host name**

  Type the host or virtual host that this Process Center needs to communicate with Process Server. Use a fully qualified host name.

  In an environment with a load balancer or proxy server between the Process Center and the Process Server services, make sure that what you designate here matches the URL for accessing the Process Server.

- **Port**

  Type the port number of the Process Server. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Server.

You can test the connection to the Process Server by clicking **Test Connection**.

Click **Next**.

10. On the Database Configuration - Part 1 page, perform the following actions:

- From the **Select a database product** drop-down, select the database product to be used by the profile.

- Select whether to **Create a new local database** or to **Use an existing local or remote database**.

  If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

  If the database product you are using with the software already exists, select **Use an existing local or remote database** .

- In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.

- In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.

- In the **Common database name** field, enter a name for the common database or accept the **CMNDB** default value.

- Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

  If you do not select the checkbox, the scripts are output to the default directory.

- Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

11. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

    In the Database Configuration - Part 2 page, complete the configuration of the database you selected.

    Configuration parameters for all databases are listed in the sub-steps that follow:

    - For a listing of DB2 parameter definitions, click here
    - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
    - For a listing of Microsoft SQL Server parameter definitions, click here
    - For a listing of Oracle parameter definitions, click here

    a. Set values for the DB2 Database

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 170. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

    b. Set values for the DB2 Universal Database for z/OS

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Center database, must exist.

Table 171. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.

Table 171. Required database configuration fields for DB2 Universal Database for z/OS (continued)

Field	Action needed
Server port	Accept the default value of 446 or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 172. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**

Common database	For the Common database, enter values for the following parameters:
	
	• **User name**
	  Enter the Common database user name.
	• **Password**
	  Enter a password to authenticate with the Common database.
	• **Confirm password**
	  Confirm the password by reentering it.

Process Server database	For the Process Server database, enter values for the following parameters:
	
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	  Confirm the password by reentering it.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	  Confirm the password by reentering it.

Table 172. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 173. Required database configuration fields for Microsoft SQL Server

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the Common Event Infrastructure bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	• **Confirm password**
	  Confirm the password by reentering it.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the SCA application bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the SCA application bus messaging engine.
	• **Confirm password**
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• **User name**
	  Enter the SCA system bus messaging engine user name.
	• **Password**
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• **Confirm password**
	  Confirm the password by reentering it.

Table 173. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	
	• `User name`
	  Enter the Performance Data Warehouse bus messaging engine user name.
	
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	
	• `Confirm password`
	  Confirm the password by reentering it.

   d. Set values for the Oracle database

     The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

     Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 174. Required database configuration fields for Oracle

Field	Action needed

Common database	For the Common database, enter values for the following parameters:
	
	• `User name`
	  Enter the Common database user name.
	
	• `Password`
	  Enter a password to authenticate with the Common database.
	
	• `Confirm password`
	  Confirm the password by reentering it.

Table 174. Required database configuration fields for Oracle (continued)

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Process Server database user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Process Server database.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.
	
	Note: Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Performance Data Warehouse database user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Performance Data Warehouse database.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.
	
	Note: The Performance Data Warehouse database user name and the Process Server database cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Click **Next** to go to the Database Configuration (Part 3) page.

Table 175. Required database configuration fields for Oracle

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	
	• **User name**
	
	  Enter the Common Event Infrastructure bus messaging engine user name.
	
	• **Password**
	
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	
	• **Confirm password**
	
	  Confirm the password by reentering it.

Table 175. Required database configuration fields for Oracle (continued)

Field	Action needed

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	
	• `User name`
	
	  Enter the SCA application bus messaging engine user name.
	
	• `Password`
	
	  Enter a password to authenticate with the SCA application bus messaging engine.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	
	• `User name`
	
	  Enter the SCA system bus messaging engine user name.
	
	• `Password`
	
	  Enter a password to authenticate with the SCA system bus messaging engine.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	
	• `User name`
	
	  Enter the Process Server bus messaging engine user name.
	
	• `Password`
	
	  Enter a password to authenticate with the Process Server bus messaging engine.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters:
	
	• `User name`
	
	  Enter the Performance Data Warehouse bus messaging engine user name.
	
	• `Password`
	
	  Enter a password to authenticate with the Performance Data Warehouse bus messaging engine.
	
	• `Confirm password`
	
	  Confirm the password by reentering it.

12. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

    Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

- **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
- **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

13. Complete the Process Center stand-alone profile configuration by performing one of the following tasks, depending on whether you chose to postpone actual database configuration by producing scripts to be run manually.

   - If you completed configuration of the common database, Performance Data Warehouse database and the Process Center database using the Profile Management Tool, ensure **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.
   - If you will be using the Common Event Infrastructure component, you need to manually create its databases. See Configuring a Common Event Infrastructure (CEI) database.
   - If you chose to postpone actual database configuration by producing scripts to be run manually, perform the following steps:

      a. Clear the check box beside **Launch the First steps console** and click **Finish** to close the Profile Management Tool. Also, close the Profiles page, which is open in a separate window.

      b. Use your site's standard database definition tools and procedures to edit and run the scripts the Profile Management Tool generated to create, or create and configure the **CMNDB** databases. Also see the topics that describe manually creating new databases or new tables in existing databases:

         – For the Common Event Infrastructure database: Configuring the event database and its subtopics.

         – For the Common database: Creating the Common database and tables after profile creation or augmentation.

      When the databases are configured, start the First steps console associated with the profile, as described in Starting the First steps console: IBM Business Process Manager Advanced or topics/tins_bpm_ps_start_firststeps.dita.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager profile.

Check server operation by selecting **Start the server** from the First steps console. An output window opens. If you see a message like the following message, your server is operating properly:

```
ADMU3000I: Server server1 open for e-business; process id is 3348
```

You can also check server operation by running the Installation Verification Test (IVT) from the First steps console or running the **wbi_ivt** command-line utility. This test is to verify that your deployment manager or stand-alone server installation is operating properly.

Augmenting Deployment Manager profiles for Process Center using the **Typical** *option:*

Use the **Typical profile augmentation** option on the Profile Management Tool graphical user interface (GUI) to augment and configure a deployment manager profile for Process Center. Selecting the **Typical** option augments profiles with default configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

- Solaris When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/ .Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

  After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

This topic assumes that you are using the Profile Management Tool to augment profiles. As a result, it is assumed that you have started the Profile Management Tool, have chosen to augment a deployment manager profile for Process Center and have selected the **Typical profile augmentation** option.

The task describes the procedure for augmenting a deployment manager profile for Process Center using the **Typical** augmentation option. The **Typical** augmentation option sets the Common database configuration to DB2 (if it is not already configured on the profile you are augmenting).

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, you are viewing the Administrative Security page. All IBM Business Process Manager profiles have security enabled.

1. Enable administrative security

   From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

2. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager profile.

Check the server operation by selecting **Start the deployment manager** from the First steps console. An output window opens. If you see a message like the following one, your deployment manager is operating properly:

```
ADMU3000I: Server dmgr open for e-business; process id is 3072
```

In a deployment environment, you must create and configure other databases, create custom profiles, and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

Augmenting Deployment Manager profiles for Process Center using the **Advanced** *option:*

Use the **Advanced profile creation** option on the Profile Management Tool graphical user interface (GUI) to augment and configure a deployment manager profile for Process Center . Selecting the **Advanced** option augments profiles with customized configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 183.

- **Solaris** When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/`.Xdefaults` file:

  ```
  Eclipse*spacing:0
  Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
  ```

  After adding the lines, run the following command before starting the Profile Management Tool:

  ```
  xrdb -load user_home/.Xdefaults
  ```

The task describes the procedure for augmenting a deployment manager profile for Process Center using the **Advanced** augmentation option.

By selecting the **Advanced** option, you can perform the following tasks:
- Configure the Common database.
- Configure the database using a database design file.

Important: The procedure in this topic outlines all the pages available in the Profile Management Tool to configure a deployment manager profile using the **Advanced** option. If a particular component, such as the Common database, is already configured on the profile you are augmenting, the configuration page for that component will not appear.

For augmentation on a profile from an IBM BPM configuration (Advanced, Standard or Express), and as a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 283, you are viewing the Administrative Security page. Proceed to .

1. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If you see the Administrative Security page, it means that the profile you are augmenting has security enabled. You must reenter the administrative user ID and password for that profile.

2. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.

3. Optional: Configure the database using a design file. This option is available for both Advanced stand-alone server and Advanced deployment manager profiles.

a. Select **Use a database design file for database configuration**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

d. Click **Next**.

If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

4. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

The progress of the configuration displays on the Profile Configuration Progress window.

When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

- **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
- **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

You have augmented a WebSphere Application Server or Application Server Network Deployment profile into an IBM Business Process Manager profile.

Check server operation by selecting **Start the deployment manager** from the First steps console. An output window opens. If you see a message like the following one, your deployment manager is operating properly:

```
ADMU3000I: Server dmgr open for e-business; process id is 3072
```

In a deployment environment, you must create and configure other databases, create custom profiles, and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

Augmenting custom profiles (managed nodes) for Process Center using the **Typical** *option:*

Use the **Typical** augmentation option on the Profile Management Tool graphical user interface (GUI) to augment and configure WebSphere Application Server version 7.0 or WebSphere Application Server Network Deployment version 7.0 custom profiles (managed nodes). Selecting the **Typical** option augments profiles with default configuration settings.

You have started the Profile Management Tool, have chosen to augment a custom profile, and have selected the **Typical** profile augmentation option.

In this type of configuration, you can choose to federate the node to an existing deployment manager during the augmentation process, or federate it later using the **addNode** command. If you decide to federate the profile during the augmentation process, the tool sets the Common database configuration to the same database as the deployment manager. If you decide not to federate, the database configuration is left unconfigured.

1. In the Federation page, choose to federate the node into the deployment manager now as part of the profile augmentation, or at a later time and apart from profile augmentation.

- If you choose to federate the node as part of the profile augmentation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if administrative security is enabled on the deployment manager. Leave the **Federate this node later** check box deselected. Then click **Next**.

  The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

  Attention: Federate the custom node during profile augmentation only if all the following conditions are true:

  – You do not plan to use this custom node as a migration target.
  – No other node is being federated. (Node federation must be serialized.)
  – The deployment manager is running.
  – The deployment manager is an IBM Business Process Manager deployment manager. IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM Business Process Manager deployment manager.
  – The deployment manager is at a release level the same or higher than the release level of the custom profile you are augmenting.
  – The deployment manager has a JMX administrative port enabled. The default protocol is SOAP. (Click **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

  If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.

- If you choose to federate the node at a later time and apart from profile augmentation, select the **Federate this node later** check box and click **Next**.

  The Profile Summary page is displayed.
2. In the Profile Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   When the profile augmentation is complete, the Profile Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.
3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a Process Center profile.

If you did not federate the profile during profile augmentation, federate it now. The node within the profile is empty until you federate the node and use the deployment manager to customize the node.

Augmenting custom profiles (managed nodes) for Process Center using the **Advanced** *option:*

Use the **Advanced** augmentation option on the Profile Management Tool graphical user interface (GUI) to augment and configure WebSphere Application Server version 7.0 or WebSphere Application Server Network Deployment version 7.0 custom profiles (managed nodes). Selecting the **Advanced** option lets you customize the augmentation and configuration settings.

You have started the Profile Management Tool, have chosen to augment a custom profile, and have selected the **Advanced** profile augmentation option.

While augmenting custom profiles, you can choose to federate the node to an existing deployment manager during the augmentation process, or federate it later using the **addNode** command.

1. In the Federation page, choose to federate the node into the deployment manager now as part of the profile augmentation, or at a later time and apart from profile augmentation.
   - If you choose to federate the node as part of the profile augmentation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if administrative security is enabled on the deployment manager. Leave the **Federate this node later** check box deselected. Then click **Next**.

     The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

     Attention: Federate the custom node during profile augmentation only if all the following conditions are true:
     – You do not plan to use this custom node as a migration target.
     – No other node is being federated. (Node federation must be serialized.)
     – The deployment manager is running.
     – The deployment manager is an IBM Business Process Manager deployment manager. IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM Business Process Manager deployment manager.
     – The deployment manager is at a release level the same or higher than the release level of the custom profile you are augmenting.
     – The deployment manager has a JMX administrative port enabled. The default protocol is SOAP. (Click **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)
     – If the managed node you are augmenting has already been federated to a deployment manager profile, when augmenting this custom profile, the dmgr profile must be running. Additionally, specify the host name or IP address and SOAP port of the deployment manager to make sure the federated node is augmented.

     If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** to exit from it, and then make different selections on the Federation page.
   - If you choose to federate the node at a later time and apart from profile augmentation, select the **Federate this node later** check box and click **Next**.

   The Profile Summary page is displayed.
2. In the Profile Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   When the profile augmentation is complete, the Profile Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might appear in place of the success message, for example:

- **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
- **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager profile.

If you did not federate the profile during profile augmentation, federate it now. The node within the profile is empty until you federate the node and use the deployment manager to customize the node.

Augmenting profiles using the manageprofiles command-line utility:

Augmentation is the ability to change an existing profile with an augmentation template. You can augment existing WebSphere Application Server or WebSphere Application Server Network Deployment profiles into WebSphere Enterprise Service Bus or IBM Business Process Manager profiles, or WebSphere Enterprise Service Bus profiles into IBM Business Process Manager profiles.You can augment existing WebSphere Application Server or WebSphere Application Server Network Deployment profiles into WebSphere Enterprise Service Bus profiles. You can augment a profile by using the `manageprofiles` command-line utility.

Before using this procedure, ensure that you have done the following tasks:
- You have reviewed the list of prerequisites for creating or augmenting a profile at Prerequisites for creating or augmenting profiles.
- You have shut down any servers associated with the profile that you plan to augment.
- If you plan to augment a stand-alone server or custom profile, you have determined if it has already been federated to a deployment manager:
  - If the profile you want to augment has already been federated to a deployment manager, you cannot augment it using the `manageprofiles` command-line utility.
  - If the profile you want to augment has not already been federated to a deployment manager, when you do federate it later by using the `addNode` command, the following must be true of the deployment manager with which it is federated in order for the augmentation to complete successfully:
    - It must be running.
    - It must be an IBM Business Process Manager deployment manager profile.
    - It must be at a release level the same or higher than that of the profile you are augmenting.
      - IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager.
      - WebSphere Enterprise Service Bus profiles can use a WebSphere Enterprise Service Bus deployment manager or IBM Business Process Manager deployment manager.
    - It must have a JMX administrative port enabled. The default protocol is SOAP.
- You have reviewed the manageprofiles parameters and default values in manageprofiles parameters.
- You have verified that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Security role required for this task: See Granting write permission of files and directories to nonroot users for profile creation .

To use the `manageprofiles` command-line utility to augment a profile, perform the following steps.

1. Determine the template that the existing profile was created with (deployment manager, stand-alone, or managed). You can determine the template that was used for creating the profile by viewing the profile registry in `install_root`/properties/profileRegistry.xml. Do not modify this file, use it only to view the templates.

2. Find the appropriate template to augment to. You can augment an existing WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager or WebSphere ESB profile. You can augment an existing WebSphere ESB profile into an IBM Business Process Manager profile.

   Templates for each profile are located in the `install_root`/profileTemplates/BPM directory for BPM templates and under `install_root`/profileTemplates for other products.

   The following profile templates are available:
   - `default.procsvr`: for Process Server stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - `default.procsvr.adv`: for Process Server stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Advanced.
   - `default.procctr`: for Process Center stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - `default.procctr.adv`: for Process Center stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Advanced.
   - `dmgr.procsvr`: for a Process Server deployment manager profile, which defines a deployment manager for IBM BPM Standard. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - `dmgr.procsvr.adv`: for a Process Server deployment manager profile, which defines a deployment manager for IBM BPM Advanced. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - `dmgr.procctr`: for a Process Center deployment manager profile, which defines a deployment manager for IBM BPM Standard. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - `dmgr.procctr.adv`: for a Process Center deployment manager profile, which defines a deployment manager for IBM BPM Advanced. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - `managed.procsvr`: for a Process Server custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Standard. If you have decided that your solution requires a network deployment configuration, your runtime environment requires one or more managed nodes. A *custom profile* contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.
   - `managed.procsvr.adv`: for a Process Server custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Advanced. If you have decided that your solution requires a network deployment configuration, your runtime environment requires one or more managed nodes. A *custom profile* contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating. Also, IBM BPM Advanced: Process Server profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use an IBM BPM Advanced: Process Server deployment manager.
   - `managed.procctr` for a Process Center custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Standard. If you have decided that your solution requires a deployment environment, your runtime environment requires one or more managed

nodes. A *custom profile* contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.

- `managed.procctr.adv` for a Process Center custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Advanced. If you have decided that your solution requires a deployment environment, your runtime environment requires one or more managed nodes. A *custom profile* contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.
- `default.esbserver`: for a WebSphere Enterprise Service Bus stand-alone server profile, which defines a stand-alone server.
- `dmgr.esbserver`: for a WebSphere Enterprise Service Bus deployment manager profile, which defines a deployment manager.
- `managed.esbserver`: for a WebSphere Enterprise Service Bus custom profile, which, when federated to a deployment manager, defines a managed node.

Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates directory.

3. Create a response file. Do not supply a **-profilePath** parameter, and replace "create" with "augment" when creating the response file. For the complete list of parameters and their default values, see manageprofiles parameters.

   Sample response files are available under the `install_root/BPM/samples/manageprofiles/` directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail. See Creating a response file using the IBM Business Process Manager samples.

4. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - [Linux] [UNIX] **manageprofiles.sh -response** *myResponseFile*

   - [Windows] **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

You can see that your profile augmentation completed successfully if you receive a `INSTCONFSUCCESS:` `Profile augmentation succeeded.` message, and you can check the following log file:

- [Linux] [UNIX] *install_root*/logs/manageprofiles/*profile_name*_augment.log
- [Windows] *install_root*\logs\manageprofiles*profile_name*_augment.log

Run the Installation Verification Test (IVT) tool to verify that the profile was augmented successfully. To do this, run the following command:

- **Linux** **UNIX** **On Linux and UNIX platforms:** *profile_root*/bin/wbi_ivt.sh
- **Windows** **On Windows platforms:** *profile_root*\bin\wbi_ivt.bat

Augmenting Process Server stand-alone profiles using the manageprofiles command-line utility:

Augmentation is the ability to change an existing profile with an augmentation template. You can augment existing WebSphere® Application Server or WebSphere Application Server Network Deployment profiles into IBM Business Process Manager profiles. You can augment a profile from the command line using the **manageprofiles** command-line utility.

- You have reviewed the list of prerequisites for creating or augmenting a profile at "Prerequisites for creating or augmenting profiles" on page 183.
- You have shut down any servers associated with the profile that you plan to augment.
- If you plan to augment a stand-alone server or custom profile, you have determined if it has already been federated to a deployment manager:
  - If the profile you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.
  - If the profile you want to augment has not already been federated to a deployment manager, when you do federate it via the **addNode** command later, the following must be true of the deployment manager with which it is federated in order for the augmentation to complete successfully:
    - It must be running.
    - It must be at a release level the same or higher than that of the profile you are augmenting. IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use Process Server deployment manager profile from an IBM Business Process Manager Advanced configuration.
    - It must have a JMX administrative port enabled. The default protocol is SOAP.
    - It must have already been augmented into an IBM Business Process Manager or WebSphere Enterprise Service Bus profile, depending on the product you have installed.
- You have reviewed example profile augmentation commands in this section.
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Security role required for this task: See "Granting write permission of files and directories to nonroot users for profile creation" on page 184.

Determine the template that the existing profile was created with (deployment manager, stand-alone, or managed). You can determine the template that was used for creating the profile by viewing the profile registry in *install_root*/properties/profileRegistry.xml. Do not modify this file, use it only to view the templates. For this procedure it is assumed that you are augmenting a Process Server stand-alone profile.

This task describes how to use **manageprofiles** to augment Process Server stand-alone profiles.

To use the **manageprofiles** command-line utility to augment a stand-alone profile, perform the following steps.

1. Find the appropriate template to augment to. You can augment an existing WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager or WebSphere ESB profile. You can augment an existing WebSphere ESB profile into an IBM Business Process Manager profile.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates and under *install_root*/profileTemplates for other products.

   The following profile templates are available:

- `default.procsvr`: for a Process Server stand-alone profile, which defines a stand-alone server that includes the capabilities and functionality of IBM Business Process Manager Standard and Express configurations.
- `default.procsvr.adv`: for a Process Server stand-alone profile, which defines a stand-alone server that includes the capabilities and functionality of an IBM Business Process Manager Advanced configuration.
- `default.esbserver`: for a WebSphere Enterprise Service Bus stand-alone server profile, which defines a stand-alone server.

Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

2. Create a response file. Do not supply a **-profilePath** parameter, and replace "create" with "augment" when creating the response file. For the complete list of parameters and their default values, see manageprofiles parameters.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail. See Creating a response file using the IBM Business Process Manager samples.

3. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - **Linux** **UNIX** **manageprofiles.sh -response** *myResponseFile*

   - **Windows** **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

You can see that your profile augmentation completed successfully if you receive a `INSTCONFSUCCESS:` `Profile augmentation succeeded.` message, and you can check the following log file:

- **Linux** **UNIX** *install_root*/logs/manageprofiles/*profile_name*_augment.log

- **Windows** *install_root*\logs\manageprofiles*profile_name*_augment.log

Run the Installation Verification Test (IVT) tool to verify that the profile was augmented successfully. To do this, run the following command:

- **Linux** **UNIX** **On Linux and UNIX platforms:** *profile_root*/bin/bpm_ivt.sh

- **Windows** **On Windows platforms:** *profile_root*\bin\bpm_ivt.bat

Augmenting Process Center stand-alone profiles using the manageprofiles command-line utility:

Augmentation is the ability to change an existing profile with an augmentation template. You can augment a profile from the command line using the **manageprofiles** command-line utility.

- You have reviewed the list of prerequisites for creating or augmenting a profile at "Prerequisites for creating or augmenting profiles" on page 183.
- You have shut down any servers associated with the profile that you plan to augment.
- If you plan to augment a stand-alone server or custom profile, you have determined if it has already been federated to a deployment manager:
  - If the profile you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.
  - If the profile you want to augment has not already been federated to a deployment manager, when you do federate it via the **addNode** command later, the following must be true of the deployment manager with which it is federated in order for the augmentation to complete successfully:
    - It must be running.
    - It must be at a release level the same or higher than that of the profile you are augmenting. IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use Process Server deployment manager profile from an IBM Business Process Manager Advanced configuration.
    - It must have a JMX administrative port enabled. The default protocol is SOAP.
    - It must have already been augmented into an IBM Business Process Manager or WebSphere Enterprise Service Bus profile, depending on the product you have installed.
- You have reviewed example profile augmentation commands in this section.
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Security role required for this task: See "Granting write permission of files and directories to nonroot users for profile creation" on page 184.

Determine the template that the existing profile was created with (deployment manager, stand-alone, or managed). You can determine the template that was used for creating the profile by viewing the profile registry in *install_root*/properties/profileRegistry.xml. Do not modify this file, use it only to view the templates. For this procedure it is assumed that you are augmenting a Process Center stand-alone profile.

This task describes how to use **manageprofiles** to augment Process Center stand-alone profiles.

To use the **manageprofiles** command-line utility to augment a stand-alone profile, perform the following steps.

1. Find the appropriate template to augment to. You can augment an existing WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager or WebSphere ESB profile. You can augment an existing WebSphere ESB profile into an IBM Business Process Manager profile.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates and under *install_root*/profileTemplates for other products.

   The following profile templates are available:
   - default.procctr: for a Process Server stand-alone profile, which defines a stand-alone server that includes the capabilities and functionality of IBM Business Process Manager Standard and Express.
   - default.procctr.adv: for a Process Server stand-alone profile, which defines a stand-alone server that includes the capabilities and functionality of IBM Business Process Advanced.

   Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions

are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

2. Create a response file. Do not supply a **-profilePath** parameter, and replace "create" with "augment" when creating the response file. For the complete list of parameters and their default values, see manageprofiles parameters.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail. See Creating a response file using the IBM Business Process Manager samples.

3. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux   UNIX **manageprofiles.sh -response** *myResponseFile*

   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

Configuring databases

Before starting a profile, you need to have configured the databases that are to be used with the profile.

You must have planned your database requirements, including a list of all databases and schema names. For more information, see Planning your database configuration

Creating databases

If you did not create databases while creating profiles, you can use the SQL scripts to create them.

You can create the databases as part of creating a stand-alone or deployment manager profile, you can use the database design tool (dbDesignGenerator), you can manually create the databases, or you can create the databases by running the database script files after profile creation. In a network deployment environment, you must create the databases before starting the deployment manager and creating custom profiles.

Restriction: For Oracle, a database instance is not created as part of the SQL file execution; you must create an instance manually, using the Oracle product documentation.

To create the databases by running the generated SQL scripts:

1. Find the scripts in the following directories:
   - For the Process Server database:

     install_root\dbscripts\ProcessServer*db_type*\createDatabase.sql
   - For the Performance Data Warehouse database:

     install_root\dbscripts\PerformanceDW*db_type*\createDatabase.sql
   - For the Common database:

     install_root\dbscripts\CommonDB*db_type*\createDatabase_CommonDB.sql

2. Make any required changes to the appropriate script. Look for @ to find out where changes are needed. For example, replace **@DB_NAME@** with the database name you would like.

Note: For SQL Server, ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name 'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement(SQLServerPreparedStatement.java
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute(SQLServerPreparedStatement.java:
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

3. Run the appropriate script and make sure that it completes without errors.

Related tasks:

"Creating the Process Server or Process Center database tables"
Run the SQL scripts to create the database tables for your IBM Process Server or IBM Process Center configuration.

"Creating the Performance Data Warehouse database tables"
Run the SQL scripts to create the database tables for your IBM Performance Data Warehouse.

Creating the Process Server or Process Center database tables

Run the SQL scripts to create the database tables for your IBM Process Server or IBM Process Center configuration.

You have performed all of the steps required for your configuration and have selected not to run the database scripts to initialize the databases during the configuration. You have also created the database in which you want to create the Process Server or Process Center database tables. For information about creating the database, see *Creating databases*.

The procedure in this task describes how to run the Process Server or Process Center SQL scripts that were produced when you completed your configuration.

To run the Process Center or Process Server SQL scripts that were produced when you completed your configuration follow the steps below:

Note: The Process Server does not support schema. You must login as the user and then execute the SQL file.

1. Go to the directory that holds the SQL scripts for creating the database tables.

   By default, SQL scripts are output to `install_root/profile`/dbscripts/ProcessServer/`DB_product` at profile creation time. For example,

   `C:\install_root\profiles\Proc01\dbscripts\ProcessServer\DB2`

2. Connect to your database. For example, run **db2 connect to** *databaseName*.

3. Create the tables for Process Server or Process Center.

   From the directory navigated to in step 1, run **createTable_ProcessServer.sql** on the database you configured for the Process Server or Process Center (BPMDB).

   Make sure all SQL statements succeed without any errors.

4. Create the table procedures for Process Server or Process Center.

   From the directory navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server or Process Center (BPMDB).

   Make sure all SQL statements succeed without any errors.

   If you are using DB2 Universal, DB2 Universal for z/OS, or Microsoft SQL Server, use "GO" as a delimiting character when executing the stored procedure. For example, **db2 -tdGO -vf createProcedure_ProcessServer.sql**.

You have created the database tables for your Process Server or Process Center configuration and have completed the database configuration.

You can now load the database with system information and start the servers or clusters on your Process Server or Process Center configuration.

Related tasks:

"Creating databases" on page 356
If you did not create databases while creating profiles, you can use the SQL scripts to create them.

Creating the Performance Data Warehouse database tables

Run the SQL scripts to create the database tables for your IBM Performance Data Warehouse.

You have performed all of the steps required for your configuration and have selected not to run the database scripts to initialize the databases during the configuration. You have also created the database in which you want to create the Performance Data Warehouse database tables. For information about creating the database, see *Creating databases*.

The procedure in this task describes how to run the Performance Data Warehouse SQL scripts that were produced when you completed your configuration.

To run the Performance Data Warehouse SQL scripts that were produced when you completed your configuration follow the steps below:

Note: The Performance Data Warehouse does not support schema. You must login as the user and then execute the SQL file.

1. Go to the directory that holds the SQL scripts for creating the database tables.

   By default, SQL scripts are output to *install_root/profile*/dbscripts/PerformanceDW/*DB_product* at profile creation time. For example,

   `C:\install_root\profiles\Proc01\dbscripts\PerformanceDW\DB2`

2. Connect to your database. For example, run **db2 connect to** *databaseName*.

3. Create the tables for the Performance Data Warehouse.

   From the directory navigated to in step 1, run **createTable_PerformanceDW.sql** on the database you configured for the Performance Data Warehouse (PDWDB).

   Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

You can now load the database with system information and start the servers or clusters on your Performance Data Warehouse.

Configuring a Microsoft SQL Server database

You can create an IBM Process Server stand-alone profile for use with Microsoft SQL Server.

Prerequisites

Before creating a profile, you must install Microsoft SQL Server on the server that hosts the database.

Database restrictions

- The databases that are created for the components must be case-sensitive. The two exceptions are the process server database (BPMDB) and performance data warehouse database (PDWDB). These two must be case-insensitive. If you are using the SQL files to create the database for Business Process Choreographer, the SQL files create case-sensitive names for the databases.
- The Business Process Choreographer Explorer reporting function does not support a Microsoft SQL Server database.

Database privileges and security considerations

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

Table 176 on page 360 shows the database privileges that are required to access the data store.

Table 176.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

Configuring XA transactions for Microsoft SQL Server:

You must configure XA transactions after the database is installed and before you start the server. The Microsoft SQL Server JDBC Driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server start up: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

   c. Right-click **Local DTC** and then select **Properties**.

   d. Click the **Security** tab on the **Local DTC Properties** dialog box.

   e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

   f. Click OK again to close the Properties dialog box, and then close Component Services.

   g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

   a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from Microsoft Site using URL from Resources section.

   b. Unzip archive to any folder.

   c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the x86 folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the x64 folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in master database (e.g. for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating a stand-alone profile for use with Microsoft SQL Server:

You can create a Process Server stand-alone profile for use with Microsoft SQL Server by passing the required parameters using the Profile Management Tool or the manageprofiles command-line utility. You can also create the profile using the design file, which is generated by the database design tool (DDT).

Before creating a profile, complete the following prerequisites:
- Install Microsoft SQL Server on the server that hosts the database.
- Create the `CMNDB` (CommonDB) and `BPEDB` (Business Process Choreographer), BPMDB (Process Server) and PDWDB (Performance Data Warehouse) databases. The following example command is used to create a database for Microsoft SQL Server:

```
osql -b -S hostname -U db_user_account -P db_user_password
-Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
```

  where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because the BPMDB (Process Server) and PDWDB (Performance Data Warehouse) databases must be case-insensitive.

- If Business Space is configured, it creates tables in the `CMNDB` database with a schema name of `IBMBUSSP`. To create the messaging engines tables in the `CMNDB` database, you must manually create the schemas as described in step 2 on page 366. If you are using a local database, the Common Event Infrastructure database is created when the profile is created; otherwise, you must use the script that is generated when the profile is created to create the Common Event Infrastructure database.

- If you are going to use the Common Event Infrastructure, you must create the CEI database manually. See *Configuring a Common Event Infrastructure (CEI) database*.

IBM Business Process Manager packages JDBC drivers for SQL Server. For information about the JDBC drivers (including version and level information), see the Detailed hardware and software requirements for IBM Business Process Manager page.

Note: You are responsible for providing JDBC driver levels outside of what is packaged with IBM Business Process Manager.

You can configure the CommonDB, Process Server, Performance Data Warehouse, Business Space, Service Component Architecture (SCA) System Messaging Engine and SCA Application Messaging Engine when the stand-alone profile is created.

Configure the Business Process Choreographer container, Business Process Choreographer Messaging Engine, and Business Process Choreographer Explorer using the `bpeconfig.jacl` script or the administrative console. Refer to step 3 on page 366 for information about how to configure Business Process Choreographer.

1. Create the profile using either the Profile Management Tool, the manageprofiles command-line utility, or by importing the `dbDesign` file, which is generated by the DDT.
   - To create the profile using the Profile Management Tool, see "Creating Process Server stand-alone profiles using the Profile Management Tool" on page 189. Table 177 on page 362 lists the fields that

you must complete on the Database Configuration (Part 2) page and Required database
configuration fields for Microsoft SQL Server - Part 3.

Table 177. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
Common database	For the Common database, enter values for the following parameters: • `User name` Enter the Common database user name. • `Password` Enter a password to authenticate with the Common database. • `Confirm password` Confirm the password by reentering it.
Process Server database	For the Process Server database, enter values for the following parameters: • `User name` Enter the Process Server database user name. • `Password` Enter a password to authenticate with the Process Server database. • `Confirm password` Confirm the password by reentering it.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name` Enter the Performance Data Warehouse database user name. • `Password` Enter a password to authenticate with the Performance Data Warehouse database. • `Confirm password` Confirm the password by reentering it.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 178. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action needed

Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Common Event Infrastructure bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Common Event Infrastructure bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA application bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA application bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the SCA system bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the SCA system bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters:
	• `User name`
	  Enter the Process Server bus messaging engine user name.
	• `Password`
	  Enter a password to authenticate with the Process Server bus messaging engine.
	• `Confirm password`
	  Confirm the password by reentering it.

Table 178. Required database configuration fields for Microsoft SQL Server - Part 3 (continued)

Field	Action needed
Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters: • `User name` Enter the Performance Data Warehouse bus messaging engine user name. • `Password` Enter a password to authenticate with the Performance Data Warehouse bus messaging engine. • `Confirm password` Confirm the password by reentering it.

During a Process Server stand-alone profile configuration, the Profile Management Tool performs the following actions:

– Assigns customized values to ports, to the location of the profile, and to the names of the profile, node, server, host, and cell (when applicable)
– Configures the common database
– Configures the Process Server and Performance Data Warehouse Databases
– Creates the tables in each of the respective databases if the **-dbDelayConfig** parameter is set to **false**. If this parameter is set to **true**, you must manually run the SQL scripts, which are located in the *install_root*/profiles/*profile_name*/dbscripts directory.

> **Note:** If you are using a remote database and want to delay running the database scripts, set the **-dbDelayConfig** parameter to **true**.

– Deploys the administrative console and the WebSphere Application Server sample application
– Deploys the default application (which contains the Snoop, Hello, and HitCount servlets)
– Creates a web server definition
– Enables administrative security
– If your operating system and the privileges of your user account permit the creation of services, creates a system service to run the server
– Configures Business Rules Manager and creates a Business Process Choreographer sample configuration

• To create the profile using the **manageprofiles** command-line utility, see "Creating Process Server stand-alone profiles using manageprofiles" on page 253.

The following example commands are used to create a stand-alone profile that includes the CommonDB, Common Event Infrastructure, Messaging Engines, and Business Space components in one database.

For Microsoft SQL Server JDBC 1.2 driver:

```
install_root/bin/manageprofiles -create -templatePath install_root/profileTemplates/BPM/
default.procsvr.adv -dbType MSSQLSERVER_MICROSOFT -dbJDBCClasspath
path to JDBC driver -dbDriverVersion 1.2 -dbUserId userID -dbPassword password -
dbCommonForME true -dbCeiMeSchemaName
ceiSchema -dbSysMeSchemaName sysSchema
-dbAppMeSchemaName appSchema
```

For Microsoft SQL Server JDBC 2.0 driver:

```
install_root/bin/manageprofiles -create -templatePath install_root/profileTemplates/BPM/
default.procsvr.adv -dbType MSSQLSERVER_MICROSOFT -dbJDBCClasspath
path to JDBC driver -dbDriverVersion 2.0 -dbUserId userID -dbPassword password -
dbCommonForME true -dbCeiMeSchemaName
ceiSchema -dbSysMeSchemaName sysSchema
-dbAppMeSchemaName appSchema
```

Table 179 on page 365 shows the **manageprofiles** parameters that are available to configure the common database on Microsoft SQL Server.

Table 179. Available manageprofiles parameters to configure the common database using Microsoft SQL Server

Parameters	Description
-dbJDBCClasspath *jdbc_driver_location*	The default is <install_root>/jdbcdrivers/<dbProduct>, where <**dbProduct**> , where dbProduct=**SQLServer**
-dbType *db_type*	The database type. Set one of the following values: • **MSSQLSERVER_DATADIRECT** for a Microsoft SQL Server database using a DataDirect driver • **MSSQLSERVER_MICROSOFT** for a Microsoft SQL Server database using Microsoft JDBC driver V1.2 or V2.0
**-dbCreateNew true	false**	Indicates whether you will create or reuse a database. Valid values are **true** or **false**. Default value is **true**.
**-dbDelayConfig true	false**	Indicates whether you will create the table after the profile is created. Valid values are **true** or **false**. The parameter is set to **false** by default. If you are using a remote database and want to delay running the database scripts, set this parameter to **true**.
-dbDriverVersion *db_driver_version*	The database driver version. This parameter is valid only for Microsoft SQL Server. For a SQL Server database, specify either **1.2** for Microsoft SQL JDBC driver V1.2 or **2.0** for Microsoft SQL JDBC driver V2.0. If not specified, this value automatically defaults to **2.0**.
-dbHostName *db_host_name*	The database server host name or IP address. The default value is **localhost**.
-dbName *db_name*	The name of the database. The default value is **CMNDB**.
-dbOutputScriptDir *db_output_dir*	The value must be an absolute path. If you set a relative path, the SQL scripts will not be exported or executed, which will result in numerous exceptions during server startup.The location for exported database scripts. The default value is **dbscripts\CommonDB\DB2**
-dbPassword *db_pswd*	The password that is required for database authentication. This parameter is required.
-dbServerPort *db_port_number*	The database server port number. Depending on the database that you are using, you can specify a different port number instead of the default port number. The default value is **1433**.
-dbUserId *db_userid*	Specifies the user ID that has privileges to create and drop the databases. The WebSphere data source uses this ID to authenticate the database connection. For Microsoft SQL Server databases, it specifies the SQL Server user ID that will own the database tables.

- To create the database configuration by importing the dbDesign file, which is generated by the DDT, select the **Use a database design file** option, which is available for stand-alone server profiles created using the Advanced option and is displayed in the Database Configuration page of the Profile Management Tool.
  a. Select **Use a database design file** .
  b. Click **Browse**.
  c. Specify the fully qualified path name for the design file and then click **Next**.
  d. To run the database scripts automatically (as part of the profile creation process), select the **Run database scripts to create the database tables (must not select if using a remote database)**

check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

   e. Click **Next**

   If you choose to specify a design file, the design file location is passed to the command line to complete the database configuration. For more information about using a design file for database configuration, see "Creating database design files by using the database design tool" on page 372.

   Restriction: Using the database design tool, you can specify the details for the Business Process Choreographer database in your `dbDesign` file, but these settings are ignored while the profile is being created. The Business Process Choreographer sample configuration always uses a DB2 database.

2. Create the following schemas in the `CMNDB` database as owner `sdo` using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

   Important: You must configure these schemas either before you start the messaging engine or while the messaging engine is starting.
   - `CMNSS00` (Service Component Architecture (SCA) System Bus Messaging Engine)
   - `CMNSA00` (Service Component Architecture (SCA) Application Bus Messaging Engine)
   - `CMNCM00` (Common Event Infrastructure Bus Messaging Engine)
   - `CMNBM00` (Business Process Choreographer Bus Messaging Engine)
   - `BPMPRS00` (Process Server messaging engine)
   - `BPMPER00` (Performance Data Warehouse messaging engine)

   where `CMN` is the first three characters of the common database name and `BPM` is the first three characters of the Process Server and Performance Data Warehouse databases.

3. Configure Business Process Choreographer.
   a. Planning the BPEDB database
   b. Using the bpeconfig.jacl script to configure Business Process Choreographer
   c. Creating a Microsoft SQL Server database for Business Process Choreographer

4. Optional: If you chose to delay running the database scripts in the Profile Management Tool or the manageprofiles command-line utility, you must manually create the database tables by executing the following SQL scripts:

   Important: Before you can run the scripts, you must copy the *install_root*/profiles/*profile_name*/`dbscripts` folder to the database machine.
   a. *install_root*/profiles/*profile_name*/dbscripts/CommonDB/SQLServer/configCommonDB
   b. *install_root*/profiles/*profile_name*/dbscripts/BusinessSpace/SQLServer/
      configBusinessSpaceDB
   c. install_root/profiles/profile_name/dbscripts/ProcessServer
   d. install_root/profiles/profile_name/dbscripts/PerformanceDW

5. Start the server.

Creating network deployment environments for use with Microsoft SQL Server:

This topic describes how to create a network deployment environment for use with Microsoft SQL Server.

Before creating a profile, complete the following prerequisites:
- Install Microsoft SQL Server on the server that hosts the database.
- Create the `CMNDB` (CommonDB) and `BPEDB` (Business Process Choreographer), `BPMDB` (Process Server) and `PDWDB` (Performance Data Warehouse) databases. The following example command is used to create a database for Microsoft SQL Server:

```
osql -b -S hostname -U db_user_account -P db_user_password
-Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
```

where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because the BPMDB (Process Server) and PDWDB (Performance Data Warehouse) databases must be case-insensitive.

- If you are going to use the Common Event Infrastructure, you must create the CEI database manually. See *Configuring a Common Event Infrastructure (CEI) database*.

IBM Business Process Manager packages JDBC drivers for SQL Server. For information about the JDBC drivers (including version and level information), see the Detailed hardware and software requirements for IBM Business Process Manager page.

Note: You are responsible for providing JDBC driver levels outside of what is packaged with IBM Business Process Manager.

You can configure the CommonDB when you create the Deployment Manager profile (IBM Business Process Manager Advanced only); however, the remaining components must be configured using the Deployment Environment panels in the administrative console. The components to be configured are:

- Common Event Infrastructure
- Business Space
- Business Process Choreographer
- Business Process Choreographer Explorer
- Messaging Engines

1. Create the Deployment Manager profile Use one of the following methods:

   - Using the Profile Management Tool. For more information, see "Creating Process Server deployment manager profiles using the Profile Management Tool" on page 218.

     Important:
     – Select **Run database scripts to create database tables** to run the database scripts automatically (as part of the profile creation process). If you do not select **Run database scripts to create database tables**, you or the database administrator can run the scripts manually after profile creation completes.
     – If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

     .

   - Using the **manageprofiles** command. For more information, see "Creating Process Server deployment manager and custom profiles using manageprofiles" on page 256.

     Important: If you are using a remote database and want to delay running database scripts, set the **-dbDelayConfig** parameter to **true**.

     The following example commands are used to create a Deployment Manager profile using the **manageprofiles** command that includes the following components: CommonDB, Common Event Infrastructure, Messaging Engines, and Business Space.

     For Microsoft SQL Server JDBC 1.2 driver:

```
install_root\bin\manageprofiles -create -templatePath install_root\profileTemplates\BPM\
\dmgr.procsvr.adv -dbHostName hostName -dbServerPort 1433 -dbDelayConfig true
 -configureBSpace true -dbType MSSQLSERVER_Microsoft -dbUserId userID -dbDriverVersion 1.2 -
dbJDBCClasspath
path to JDBC 1.2 driver -dbName CMNDB
 -dbPassword password
```

For Microsoft SQL Server JDBC 2.0 driver:

```
install_root\bin\manageprofiles -create -templatePath install_root\profileTemplates\BPM\
\dmgr.procsvr.adv -dbHostName hostName -dbServerPort 1433 -dbDelayConfig true
 -configureBSpace true -dbType MSSQLSERVER_Microsoft -dbUserId userID -dbDriverVersion 2.0 -
dbJDBCClasspath
path to JDBC 2.0 driver -dbName CMNDB
 -dbPassword password
```

For the **manageprofiles** parameters that are available to configure the common database on Microsoft SQL Server, see Table 180.

Table 180. Available manageprofiles parameters for configuration of common database using Microsoft SQL Server

Parameters	Description
-dbJDBCClasspath *jdbc_driver_location*	The location of JDBC driver files.
-dbType *db_type*	The database type. Set the following value: • **MSSQLSERVER_MICROSOFT** for a Microsoft SQL Server database using Microsoft JDBC driver V1.2 or V2.0
-dbCreateNew true | false	Indicates whether you will create or reuse a database. Valid values are **true** or **false**. Default value is **true**.
-dbDelayConfig true | false	Indicates whether you create the table after the profile is created. Valid values are **true** or **false**. The parameter is set to **false** by default. If you are using a remote database and want to delay running the database scripts, set this parameter to **true**.
-dbDriverVersion *db_driver_version*	The database driver version. This parameter is valid only for Microsoft SQL Server. For a SQL Server database, specify either **1.2** for Microsoft SQL JDBC driver V1.2 or **2.0** for Microsoft SQL JDBC driver V2.0. If not specified, this value automatically defaults to **2.0**.
-dbHostName *db_host_name*	The database server host name or IP address. The default value is **localhost**.
-dbName *db_name*	The name of the database. The default value is **CMNDB**.
-dbOutputScriptDir *db_output_dir*	The location for exported database scripts.
-dbPassword *db_pswd*	The password that is required for database authentication. This parameter is required.
-dbServerPort *db_port_number*	The database server port number. Depending on the database you are using, you can specify a different port number instead of the default port number. The default value is **1433**.
-dbUserId *db_userid*	Specifies the user ID that has privileges to create and drop the databases. The WebSphere data source uses this ID to authenticate the database connection. For Microsoft SQL Server databases, it specifies the SQL Server user ID that will own the database tables.

2. Start the deployment manager using one of the following methods:
   - **Windows** From the **Start** menu, select **IBM** > **BPM Advanced** > **Profiles** > *profile_name* > **Start the deployment manager**.
   - In the First Steps console, click **Start the deployment manager**.
   - Use the **startManager** command.
3. Create at least one node (managed profile) for use in the deployment environment. For more information, see "Creating Process Server deployment manager and custom profiles using manageprofiles" on page 256.

The following example commands are used to create a managed profile using the **manageprofiles**:

For Microsoft SQL Server JDBC 1.2 driver:

```
install_root\bin\manageprofiles -create -templatePath install_root\profileTemplates\BPM\
managed.procsvr -dbHostName hostName -dbServerPort 1433
-dbDelayConfig true -dbType MSSQLSERVER_MICROSOFT
-dbUserId userID -dbPassword password -dbDriverVersion 1.2
-dbJDBCClasspath path to JDBC 1.2 driver -dmgrHost localhost -dmgrPort 8879
```

For Microsoft SQL Server JDBC 2.0 driver:

```
install_root\bin\manageprofiles -create -templatePath install_root\profileTemplates\BPM\
managed.procsvr -dbHostName hostName -dbServerPort 1433
-dbDelayConfig true -dbType MSSQLSERVER_MICROSOFT
-dbUserId userID -dbPassword password -dbDriverVersion 2.0
-dbJDBCClasspath path to JDBC 2.0 driver -dmgrHost localhost -dmgrPort 8879
```

4. Create the deployment environment:

   a. In the administrative console, select **Servers** > **Deployment Environment**.

   b. Click **New**.

   c. Provide the information for each step until the step to configure the database.

   d. On the Database page, update the default values for the components that your environment is using

      Make sure you enter the correct values for the user name and schema name for components below. Deployment Environment configuration does not create any schemas and users as part of configuration. These should exist before the generation of the deployment environment is done. In SQL Server you need to make sure that the default schema for the user is set in the database. It is recommended that for each user you set the same value for the schema in the database - if you do not set the default schema for each user then it would be defaulted to 'dbo' and all the components would get configured with that schema resulting in a non-working environment.The database panel should have values of the schema which correspond to that user. If there is no option to enter a schema value in the field its expected that the default schema which is the same as the user would be set in the database.

   e. Because the component requires manual steps to create the required tables, the Business Space Create Tables check boxes are disabled. Create the tables for this components by following step 6 on page 370.

   f. Complete the rest of the steps to create the environment and save the settings. You can see **Servers** > **Deployment Environment** but the deployment environment is not started. Do not start the deployment environment at this time.

5. Optional: If you cleared **Create Tables** when you created the profile in 4, generate the scripts for the message engine.

   a. In the administrative console, select **Servers** > **Deployment Environment** > *your_deployment_environment* > **Deferred Configuration**.

   b. On the command line, go to where you want to generate the scripts.

   c. Run sibDDLGenerator.bat utility to generate the scripts for each of the schemas required in your environment. For more information about running the utility, see the Deferred Configuration page. The schema names are the values you have chosen in the database panel above.

      ```
      sibDDLGenerator.bat -system sqlserver -version 2005 -platform windows
      -schema WPRCM00 -user user_name -statementend ; > output_script_filename
      ```

      Remember to use the correct schema, which is listed in the Deferred Configuration page, and user name. Also, redirect the result to a file. Otherwise, the generated script is printed at the command prompt instead of in a file.

      Note: If you configured the databases using a database design file, it is not necessary to run the sibDDLGenerator.bat utility. For more information, see "Creating database design files by using the database design tool" on page 372.

6. Manually create the Business Space database:

   a. In the administrative console, select **Servers** > **Deployment Environment** > *your_deployment_environment* > **Deferred Configuration**.

   b. Find the Business Space scripts.

   c. Run the `createDatabase_BusinessSpace.sql` script and then the `createTable_BusinessSpace.sql` script.

7. Go to *profile_path*\dbscripts\ProcessChoreographer\SQLServer*dbName**dbSchema* and run the `createSchema.sql` script, where *dbName* is the name of the database and *dbSchema* is the schema name. Make sure that the `createSchema.sql` script runs with no errors.

8. In the administrative console, select **Servers** > **Deployment Environment** > *your_deployment_environment* > **Deferred Configuration** and click **Configuration Done**.

9. Log off of the administrative console, shut down the deployment manager, and then shut down all of the custom profiles.

10. Optional: Clean all applicable profile logs or save them in another directory. You may want to clean or move the logs as they will be appended with the last configuration. This can make it difficult to view the most current information.

11. Start the custom profiles, start the deployment manager, and then log in to the administrative console.

12. Start the deployment environment:

    a. In the administrative console, start the deployment environment by clicking **Servers** > **Server Types** > **Deployment Environments**. Select the check box next to the deployment environment and clicking **Start**.

    b. After 5 to 10 minutes (or longer, depending on the system), refresh the deployment environment page; the Status of the deployment environment changes to **started**.

13. Optional: Check the status of the following items:

    a. In Microsoft SQL Server Management Studio, locate the `Tables` folder for the common database. Check that the tables have been created with the four schemas that you created manually in step 5 on page 369.

    b. Check that tables have been created with the `XXXBE##` schema in the Business Process Choreographer database.

    c. In the administrative console, select **Applications** > **Enterprise Applications** and check that the installed applications started successfully.

    d. Select **Resources** > **JDBC** > **Data sources** and test that the connection of every component that is not related to the message engine (that is, every component that does not include **ME** in the name) is successful.

Using Windows authentication when using the SQL Server database:

IBM Business Process Manager profiles may use Windows Authentication for SQL Server data sources. When using Windows Authentication, connections to the database will not use the authentication alias set on the data source for authenticating to the database. Instead, the Microsoft SQL Server client driver will use the current user credentials of which the server is running under when making a connection to a SQL Server database.

The following limitations and restrictions apply:
- Only the Microsoft SQL Server Driver supports Windows Authentication in this configuration.
- The profile must be running on Windows.
- The user that the profile is started under must be authorized to the SQL Server database in advance using the SQL Server management tools.
- If the SQL Server is remote to the Windows system where the profile is running, the profile must be started under a Windows Domain account that has been authorized to the SQL Server database.

1. Add the `.dll` files for the driver to the IBM Business Process Manager Installation. The `.dll` files can be obtained with a SQL Server driver from Microsoft. The `.dll` files are not shipped with BPM.

   a. Obtain the driver package from Microsoft.

   b. Locate the `sqljdbc_auth.dll` file and copy it to both the `was.install.root/java/lib` and `was.install.root/java/jre/bin` directories.

      Important: The `sqljdbc_auth.dll` file must be copied to both locations for the server to work correctly. You will see the following error if the `sqljdbc_auth.dll` file is not copied to the correct locations:

      ```
      Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: This driver is not configured for integrated authentic
          at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDriverError(SQLServerException.java:170)
          at com.microsoft.sqlserver.jdbc.SQLServerConnection.sendLogon(SQLServerConnection.java:2338)
          at com.microsoft.sqlserver.jdbc.SQLServerConnection.logon(SQLServerConnection.java:1929)
          at com.microsoft.sqlserver.jdbc.SQLServerConnection.access$000(SQLServerConnection.java:41)
          at com.microsoft.sqlserver.jdbc.SQLServerConnection$LogonCommand.doExecute(SQLServerConnection.java:1917)
          at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
          at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
          at com.microsoft.sqlserver.jdbc.SQLServerConnection.connectHelper(SQLServerConnection.java:1061)
          at com.microsoft.sqlserver.jdbc.SQLServerConnection.login(SQLServerConnection.java:833)
          at com.microsoft.sqlserver.jdbc.SQLServerConnection.connect(SQLServerConnection.java:716)
          at com.microsoft.sqlserver.jdbc.SQLServerDriver.connect(SQLServerDriver.java:841)
      ```

2. Configure a profile for Windows Authentication.

   a. Create a profile and specify SQL Server as the database type. Any values can be entered for the database user name and password values as these will be removed when converting to Windows Authentication.

      Important: For stand-alone profiles, you must specify a different username for each messaging engine as the user name will be used as the schema name for the messaging engines.

   b. Run the following command before starting the server:

      ```
      JACL

      $AdminTask setDatasourcesToWindowsAuthentication

      Jython

      AdminTask.setDatasourcesToWindowsAuthentication()
      ```

      This command updates the **integratedSecurity** property on all of the SQL Server data sources to a value of **true**. It will also modify the **url** element in the `98Database.xml` files to include the **integratedSecurity** property with a value of **true**.

3. Start the server.

Creating the Common database and tables after profile creation or augmentation

If you postponed creating the Common database and its tables by clearing the **Run database scripts to create database tables (do not select if using a remote database)** check box on the Database configuration panel in the Profile Management Tool, you or your database administrator must create the database and its tables manually. You can do this using scripts that the Profile Management Tool generates during profile creation or augmentation.

This topic assumes that you created or augmented a stand-alone server or deployment manager profile using the Profile Management Tool. It also assumes that in the Database configuration panel in the Profile Management Tool, you entered a name for the database in the **Common database name** or accepted the default common database name **CMNDB** and chose to delay creation of the Common database and its tables by clearing the **Run database scripts to create database tables (do not select if using a remote database)** check box.

Because an installation of IBM Business Process Manager requires the Common database to function, if you did not allow the Profile Management Tool to create it automatically, you or your database administrator must now create the database and its tables manually by using scripts that the Profile Management Tool generated during the profile creation or augmentation.

Note: This procedure applies to DB2 Universal and SQL Server databases only.

1. Go to the directory containing the `configCommonDB.sh` script on Linux and UNIX platforms or the `configCommonDB.bat` script on Windows platforms. The default directory to which database scripts are output is:

   - `Linux` `UNIX` *profile_root*/dbscripts/CommonDB/*db_type*/*db_name*

   - `Windows` *profile_root*\dbscripts\CommonDB*db_type**db_name*

   Note: The Profile Management Tool provides an option to override the default directory. If you selected the option to override the default directory, the location to which database scripts are output is the path you entered in the **Database script output directory** field on the Database Configuration – Part 1 panel.
   The variable *db_type* represents the supported database product and *db_name* represents the name of the database.

   You must pass the `createDB` parameter to the `configCommonDB` script if you want to create a new local database; otherwise an existing database will be used.

   Note: For Oracle, the batch file creates tables on an existing schema, so the `createDB` parameter should not be specified.

   For example:

   configCommonDB.sh createDB - creates the database and also the tables

   configCommonDB.sh - creates only the tables and assumes that the database already exists

2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. The script contains only basic statements for creating databases, tables, and indexes.

After database creation completes successfully, before starting the server or deployment manager, be sure the database is running even if it is installed locally. Then start the server or deployment manager from the profile's First steps console to ensure there are no errors. You can check the `SystemOut.log` and `SystemErr.log` files for errors. These files are found in the following locations:

- *profile_root*/logs/*server_name*, for a stand-alone profile
- *profile_root*/logs/dmgr, for a deployment manager profile

Creating database design files by using the database design tool
Use the database design tool to create and generate a design of your database configuration. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 282
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Creating a database design file for a stand-alone profile or deployment environment by using the database design tool:

You can use the database design tool to generate a design file for database tables that can be used by profile creation or when using the deployment environment wizard. The database design tool generates the design file from user-interactive input or from an existing design file.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator (DBA) or solution architect. Alternatively, it might be a description of required parameters and properties.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

Before you run the database design tool, ensure that you have made the following decisions:
- The type of deployment environment in which the database will be used (stand-alone profile or network deployment environment) based on scalability and high-availability requirements.
- The location of database tables.
- Details about the database type, specifically, but not limited to, the following items:
    - Type of database (DB2, Oracle, DB2 for zOS, SQL Server)
    - Location of the JDBC driver on the system where the server profile will be created
    - User ID and password for authenticating to the database

Tip: Plan for database use when you review information about your planned usage of IBM Business Process Manager so that you make the necessary decisions on information needed by the database design tool.

This task describes how to use the database design tool to create a database design file for a stand-alone profile or deployment environment. The input for the database design tool is either user-interactive input or an existing design file. The available options change depending on your environment.

The **DbDesignGenerator** command has the following options.

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Restriction: The database design tool does not support Common Event Infrastructure (CEI).
1. Access the **DbDesignGenerator** command and run the file.

   You can find the **DbDesignGenerator** command in the following location:

- *install_root*\util\dbUtils

  For example, **C:\Program Files\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat**

- Linux   UNIX   /*install_root*/util/dbUtils

  For example, **/opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh**

Tip: If you see the message The system cannot find the specified path, you might have entered the path name incorrectly. Re-enter the path.

When the database design tool launches successfully, you see information similar to the following example:

```
[info] running DbDesignGenerator in interactive mode...

[info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
help at any time.
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern; for example:

```
[info] Please pick one of the following [database pattern(s)] :

(1)bpm.advanced.nd.topology
(2)bpm.advanced.standalone
(3)bpm.standard.standalone
(4)wesb.nd.topology
(5)wesb.standalone
```

3. To create a database design pattern for the stand-alone profile or deployment environment that you plan to configure, type the number for the appropriate option and press Enter. For a stand-alone profile, select options that include ".standalone;" for a deployment environment, select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see information similar to the following example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components, since other components may inherit values

[info] Please pick one of the following [database component(s)] :

(1)[CommonDB]    WBI_CommonDB : [master] [status = not complete]
(2)[BPCReporting]       WBI_BPCEventCollector :  [status = not complete]
(3)[BPC]        WBI_BPC :  [status = not complete]
(4)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(5)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(6)[BSpace]     WBI_BSPACE :  [status = not complete]
(7)[SibME]      WBI_BPC_ME :  [status = not complete]
(8)[SibME]      WBI_CEI_ME :  [status = not complete]
(9)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
(10)[SibME]     WBI_SCA_SYS_ME :  [status = not complete]
(11)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = not complete]
(12)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = not complete]
(13)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. You can see the database components that can be configured for the previously selected environment. The database component listed as the master component lists **[master]** beside the name and must be configured first.

For example, to configure the master component for the **(1)bpm.advanced.nd.topology** design pattern, type the number 1 to select option **(1)[CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database component and select the database type that you are configuring, type y and press Enter.

After you choose to edit the database component, you see information similar to the following example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

6. Type the number that corresponds to the database type that you want to use for your environment, and press Enter. You obtain a set of prompts to specify the database properties. These prompts vary, depending on the database type that you plan to use.

For example, type the number 1 to select **(1)DB2-distributed** as the database type. After you select this database type for configuration of the Common database, you see information similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database User name[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile creation.)[default=]

[info] Please pick one of the following [Is this database for a Process Center?(s)] :

(1)false
(2)true

Please enter the number for the Is this database for a Process Center? [default=false] :1
The user ID you use for administrative security[default=] :
The password for the name specified with the adminUserName parameter[default=] :1
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

7. At each prompt, if a default value is listed, enter the appropriate value for your database configuration, or press Enter to accept the default value. The administrative security prompt (if present) refers to the user name and password for the WebSphere administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

8. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider # XA data source # DB2 Universal JDBC Driver Provider (XA)
(2)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider # XA data source # DB2 Universal JDBC Driver Provider (XA)** as the database provider, type the number 1 and press Enter. After you select this database provider, you see information similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

   Note: The password is encrypted in the generated output files.

b. At each prompt, enter the appropriate value for your database configuration, or if a default value is listed, press Enter to accept the default value. If you are asked whether you want to create the database tables during configuration, specify **No** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components, since other components may inherit values

[info] Please pick one of the following [database component(s)] :

(1)[CommonDB]    WBI_CommonDB : [master] [status = complete]
(2)[BPCReporting]       WBI_BPCEventCollector :  [status = complete]
(3)[BPC]        WBI_BPC :  [status = complete]
(4)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(5)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(6)[BSpace]     WBI_BSPACE :  [status = complete]
(7)[SibME]      WBI_BPC_ME :  [status = complete]
(8)[SibME]      WBI_CEI_ME :  [status = complete]
(9)[SibME]      WBI_SCA_APP_ME :  [status = complete]
(10)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
(11)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(12)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(13)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

9. Optional: Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. For any database components that are listed as a parent to another component, configure the parent before the other components because the information provided will

be used as default settings for the database component listing the parent. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

Note: If your database type is DB2 for z/OS, you must configure each of the remaining components. The following guidelines apply:

- Ensure that you specify the appropriate schema name for each of the remaining database components. Typically, the Process Server, Performance Data Warehouse, and messaging engine components require unique schema names; the remaining components can be assigned the same schema name. You might also be prompted for other values that are unique to the type of component being configured; for example, a prefix for table space names or a value for VSAM catalog names (VCAT).
- If you intend to use a single database for all the system integration bus messaging engines, specify unique prefixes for their table space names because these prefixes will be used to keep the table space name of each messaging engine unique within the database.
- When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

  ```
  [info] Please pick one of the following [Is this database for a Process Center?(s)] :

  (1)false
  (2)true
  ```

  If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

  If the database is for a Process Server, you must choose the **false** option.

- As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.

10. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, enter the appropriate number to select **[save and exit]**, and press Enter. For example, after you finish configuring the **(1)bpm.advanced.nd.topology** database pattern, type the number 13 and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
    ```

11. Enter the location where you want to save the database design file, and press Enter. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

12. Enter the file name for the generated database design file, and press Enter. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

13. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter.

    a. Specify the full path of the output directory that will contain the scripts for that database component, and press Enter.

       After you type y and press Enter to indicate that you want to generate database scripts, you see information similar to the following example for each database component:

       ```
       Please enter the output directory for WBI_CommonDB [default=DB2-distributed-CommonDB] :
       ```

       After you type the location for the output directory and press Enter, you see information similar to the following example after each entry:

       ```
       [info] The script(s) have been generated in C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB
       ```

After you enter the values for each prompt, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

A database design file and, optionally, database scripts are created at the locations that you specified.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 282
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Creating a database design file for a specific component by using the database design tool:

You can use the database design tool to generate a design file for database tables required by specific components. The database design tool generates the design file from user-interactive input or from an existing design file.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator (DBA) or solution architect. Alternatively, it might be a description of required parameters and properties.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

Before you run the database design tool, ensure that you have made following decisions:
- The type of deployment environment in which the database will be used (stand-alone profile or network deployment environment) based on scalability and high-availability requirements.
- The location of database tables.
- Details about the database type, specifically, but not limited to, the following items:
  - Type of database (DB2, Oracle, DB2 for zOS, SQL Server)
  - Location of the JDBC driver on the system where the server profile will be created

– User ID and password for authenticating to the database

Tip: Plan for database use when you review information about your planned usage of IBM Business Process Manager so that you make the necessary decisions on information needed by the database design tool.

This task describes how to use the database design tool to create a database design file for a specific component. The input for the database design tool is either user-interactive input or an existing design file. The available options change depending on your environment.

The **DbDesignGenerator** command has the following options.

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Restriction: The database design tool does not support Common Event Infrastructure (CEI).

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat step 1 to step 9 on page 381 of the following procedure, to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times. For more information about the considerations for creating messaging engine data stores in a DB2 for z/OS subsystem, see "Creating the messaging engine data stores" on page 389.

1. Access the **DbDesignGenerator** command and run the file.

   You can find the **DbDesignGenerator** command in the following location:

   - ▆▆ Windows ▆▆ *install_root*\util\dbUtils

     For example, **C:\Program Files\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat**

   - ▆▆ Linux ▆▆ ▆▆ UNIX ▆▆ /*install_root*/util/dbUtils

     For example, **/opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh**

   Tip: If you see the message **The system cannot find the specified path.** you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   ```

```
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]
```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted for a component; for example:

   `[info] Please pick one of the following [component(s)] :`

   Advanced (1)bpc **Advanced** (2)bpcreporting (3)bpm_performancedw (4)bpm_processserver **Advanced** (5)bspace (6)cei (7)commondb (8)sca (9)sibme

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter. You see information similar to the following example:

   `[info] Please pick one of the following [database type(s)] :`

   ```
   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

4. Type the number that corresponds to the database type that you want to use for your environment, and press Enter. You obtain a set of prompts to specify the database properties. The prompts vary, depending on the database type that you plan to use.

   For example, type the number 1 to select **(1)DB2-distributed** as the database type. After you select this database type for configuration of the BPM Process Server database, you see information similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Database User name[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile creation.)[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :1
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :1
   Regular pagesize[default=32k] :
   Regular TableSpace[default=TWPSSPACE] :
   Temporary pagesize[default=32k] :
   Temporary TableSpace[default=TWPSTEMPSPACE] :
   ```

5. At each prompt, enter the appropriate value for your database configuration, or if a default value is listed, press Enter to accept the default value. The administrative security prompt (if present) refers to the user name and password for the WebSphere administrative console.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

6. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the

database design tool to generate SQL, this step is optional.

If you decided to configure the data source for a database after you selected **DB2-distributed** as your database type, you see information similar to the following example:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider # XA data source # DB2 Universal JDBC Driver Provider (XA)
(2)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

a. Type the number for the appropriate option to select the database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider # XA data source # DB2 Universal JDBC Driver Provider (XA)** as the database provider, type the number 1 and press Enter. After you select this database provider for the data source, you see information similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

   Note: The password is encrypted in the generated output files.

b. At each prompt, if a default value is listed, press Enter to accept the default, or enter the appropriate value for your configuration.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

7. Enter the location where you want to save the database design file, and press Enter. After you enter the location, you see information similar to the following example:

```
Please enter the output filename [default=BPM_ProcessServer_DB2-distributed.properties] :
```

8. Enter the file name for the generated database design file and press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

9. Optional: If you also want to generate database scripts based on the information provided to the database design tool, perform the following steps:

a. Type y and press Enter.

   After you type y and press Enter to indicate that you want to generate database scripts, you see information similar to the following example:

```
Please enter the output directory for BPM_ProcessServer [default=DB2-distributed-BPM_ProcessServer] :
```

b. Specify the full path of the output directory that will contain the scripts for that database component, and press Enter.

   After you enter the location for the output directory, you see information similar to the following example:

```
[info] The script(s) have been generated in C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-BPM_ProcessSe
```

After you enter the values for each prompt, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the location that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile

- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 282
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Database design tool examples:

You can use the database design tool to generate a design file for different types of databases, including DB2, Oracle, and SQL Server.

DB2

If you select **bpm.standard.standalone** or **bpm.standard.nd**, after you configure the master component, all database components are listed as complete.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(5)[save and exit]

Please enter the number for the database component :5

[status] bpm.standard.standalone is complete with 0 remaining item(s):
```

If you select **wesb.standard** or **wesb.nd.topology**, after you configure the master component, all database components are listed as complete.

```
[info] Please pick one of the following [database component(s)] :

(1)[CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BSpace] WBI_BSPACE :  [status = complete]
(3)[SibMe] WBI_CEI_ME :  [status = complete]
(4)[SibMe] WBI_SCA_APP_ME :  [status = complete]
(5)[SibMe] WBI_SCA_SYS_ME :  [status = complete]
(6)[save and exit]

Please enter the number for the database component :6

[status] wesb.standalone is complete with 0 remaining item(s):
```

Oracle

If you select **bpm.advanced.standalone** or **bpm.advanced.nd.topology**, after you configure the **CommonDB**, you must manually configure the **BPM_ProcessServer** and **BPM_PerformanceDW** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPCReporting] WBI_BPCEventCollector :  [status = complete]
(3)[BPC] WBI_BPC :  [status = complete]
(4)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(5)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(6)[BSpace] WBI_BSPACE :  [status = complete]
(7)[SibME] WBI_BPC_ME :  [status = complete]
(8)[SibME] WBI_CEI_ME :  [status = complete]
(9)[SibME] WBI_SCA_APP_ME :  [status = complete]
(10)[SibME] WBI_SCA_SYS_ME :  [status = complete]
```

```
(11)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(12)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(13)[save and exit]

Please enter the number for the database component :4
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
[info] Please pick one of the following [database component(s)] :

(1)[CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPCReporting] WBI_BPCEventCollector :  [status = complete]
(3)[BPC] WBI_BPC :  [status = complete]
(4)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(5)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(6)[BSpace] WBI_BSPACE :  [status = complete]
(7)[SibME] WBI_BPC_ME :  [status = complete]
(8)[SibME] WBI_CEI_ME :  [status = complete]
(9)[SibME] WBI_SCA_APP_ME :  [status = complete]
(10)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(11)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(12)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(13)[save and exit]

Please enter the number for the database component :5
--------------------------------------------------------------------------------

[status] BPM_ProcessServer is not complete with 3 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property 'databaseUser' for DB_USER is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property 'adminUserName' for SECURITY_ADMIN_USER
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property 'adminPassword' for SECURITY_ADMIN_PASSWO

Edit this database component? (y/n) [default=y] :
```

SQL Server

If you select **bpm.standard.standalone** or **bpm.standard.nd,** after you configure the **BPM_ProcessServer,**
you must manually configure the **BPM_PerformanceDW** component for the required database
authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(5)[save and exit]

Please enter the number for the database component :2
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
```

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 282
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 282
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Loading the database with system information

The profile creation process collects all database parameters related to the profile that you are creating and writes this configuration data to an XML file. You must run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

This command retrieves the database information from the 98database.xml file to make a connection to the database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections. Database passwords must be encrypted. For more information, see "Encrypting passwords" on page 584.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the database. This data is required for the BPM applications to run correctly.

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation.

- If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.
- In a network deployment (ND) environment, you must run this command after a server or cluster of servers is created. **For a cluster, you need to run the command only once**, specifying a single cluster member. Run this command after the database and its tables have been created, after the profile and deployment environment have been created, and before the first server is started. You do not need to rerun the command if you add another cluster member.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone or deployment manager profile directory. For example:

```
C:/<install_root>/profiles/ProcCtr01/bin
<install_root>\profiles\Dmgr01\bin
```

Run the bootstrap utility using the following syntax:

- `  Linux      UNIX  ` **bootstrapProcessServerData.sh -profilePath** *profile_path* **-dbType** *db_type* **-dbJDBCClasspath** *classpath* **[-nodeName** *node_name* **-serverName** *server_name*]
- `  Windows  ` **bootstrapProcessServerData.bat -profilePath** *profile_path* **-dbType** *db_type* **-dbJDBCClasspath** *classpath* **[-nodeName** *node_name* **-serverName** *server_name*]

where:
- **-profilePath** is the location where the profile was created. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-dbType** is the database type, such as DB2_UNIVERSAL ORACLE, or MSSQLSERVER_MICROSOFT. See Supported database types for the appropriate value. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-nodeName** is the name of the node. This parameter is required with **-serverName** for an ND environment. Do not specify for stand-alone.
- **-serverName** is the name of the server. This parameter is required with **-nodeName** for an ND environment. Do not specify for stand-alone.
- **-clusterName** (for 7.5.0.1 and later only) is the name of the application target cluster. For an ND environment, you can specify this parameter instead of the **-nodeName** and **-serverName** parameters.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center.

Important: For SQL Server, if the bootstrap utility fails, check that when you created the Process Server and Performance Data Warehouse databases, the **COLLATE** attribute indicated case insensitive (**CI**), not case sensitive (**CS**). That is, the create command should look like this:

```
CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS
```

Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name 'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
```

```
Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

Bootstrap data onto a server that is part of an ND environment:

```
bootstrapProcessServerData -profilePath c:/BPM/profiles/Dmgr01
            -dbType DB2_UNIVERSAL -dbJDBCClasspath c:/BPM/db2/java
            -nodeName node01 -serverName server1
```

Bootstrap data onto a stand-alone profile server:

```
  bootstrapProcessServerData -profilePath "c:/Program Files/IBM/BPM/
    profiles/AppSrv01" -dbType DB2_UNIVERSAL -dbJDBCClasspath "C:/Program Files/BPM/db2/java"
```

You can start the stand-alone server or first cluster member.

Creating and configuring the DB2 for z/OS database

If your deployment environment relies on a remote DB2 for z/OS database, use the procedures and reference information in this section to help you configure the database and create the database tables.

Create the DB2 for z/OS databases and storage groups using SPUFI, DSNTEP2, or DButility.sh:

The profile creation process generates Data Definition Language (DDL) scripts that you can use to create the DB2 database objects for the configuration. There are several tools that you can use to run the DDL scripts to create the database objects for your configuration. You can also use tools such as SPUFI or DSNTEP2 to create and populate the database.

Before you create the DB2 databases and storage groups, you must complete the following tasks:

- Create the server configuration. See *Roadmap: Installing and configuring IBM BPM Advanced Roadmap: Installing and configuring IBM BPM Express* for information about how to create a configuration for a stand-alone server and network deployment environment.
- Make sure that the DDL has been generated for all the components you want to configure the database with. You can generate the DDL by completing the following tasks:
  - Designing the database configuration

    For a network-deployment environment, using the database design tool (DDT) is recommended.

    For a stand-alone server environment, the database panels of the Profile Management Tool are usually enough to for stand-alone profiles, although you can use the DDT.

    The output of the DDT is a design document (xml file) of the database configuration and, optionally, the SQL scripts to create the database tables.
  - Prepare to use the DDL files
    - You might need to copy the DDL files from the IBM Business Process Manager file system into a partitioned dataset (PDS). You can use a tool such as **Ddl2Pds.sh** to copy the files.
    - There is no restriction on the naming or organization conventions that apply to the database objects.
    - The CEI DDL and the SIB DDL files need to be customized before they can be run.

Note: You can use the sample SIB DDL provided for single database configuration.

You can run the DDL scripts using **DBUtility.sh**, SPUFI, or DSNTEP2. You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 objects, particularly in a production environment. The tools can produce an audit trail of the DB2 database commands that have been issued.

If you want to work in the USS environment, you can run the DDL scripts using the **DBUtility.sh** script, which is also supplied with IBM Business Process Manager.

If you want to create the database objects across multiple databases but still want to work in the USS environment, you can run the DDL scripts using the **DBUtility.sh** script several times specifying different components for each database name.

Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed width MVS data sets.

1. Create the databases and storage groups.
2. Populate the databases using the generated DDL scripts. The location of the generated DDL scripts depends on how they were generated.

   You can find the **DbDesignGenerator** command in the following location:

   - ▉ `Windows`   `install_root`\util\dbUtils

     For example, `C:\Program Files\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat`

   - ▉ `Linux`   ▉ `UNIX`   `/install_root`/util/dbUtils

     For example, `/opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh`

   For DDL generated by other means, the DDL is in the directories under the following locations:

   - WAS_HOME/profiles/default/dbScripts for a stand-alone configuration.
   - WAS_HOME/profiles/default/dbScripts for a network deployment configuration.

   Where WAS_HOME is the top directory of your WebSphere Application Server configuration.

3. If you are running the DDL from a USS environment, assign the appropriate permissions to the copies of the files; for example:

   `chmod 755 createTable_AppScheduler.sql`

4. Edit the values in the file to suit your needs. The database names, storage groups and schema names are customized by the product configuration process. Check the values in each file to make sure they match the values that you entered in the response file that provided input to the configuration script and are suitable for your database.

   Note: The files can be provided in ASCII format. If the tools that you use to view, edit, and run the scripts require the scripts to be in EBCDIC format, use the **iconv** command to convert the file to EBCDIC. For example:

   `iconv –t IBM-1047 –f ISO8859-1 createTable_AppScheduler.sql >`
   `createTable_AppScheduler_EBCDIC.sql`

   If you have converted the file from ASCII format to EBCDIC but need to run the file in ASCII format, use **iconv** to convert the file back to ASCII. For example:

   `iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >`
   `createTable_AppScheduler.sql`

5. Optional: If you want to create database objects outside of the USS environment, for example, by using SPUFI or DSNTEP2, you can use the supplied Ddl2Pds.sh script to copy the customized DDL from USS to a partitioned dataset. For example, to copy the DDL for the IBM Business Process

Manager Common component, enter a command similar to the following from the
`/usr/lpp/zBPMPS/V7R5/zos.config/samples` directory:

```
./Ddl2Pds.sh -Source
/WebSphere/V7S05Z1/AppServer/profiles/default/dbscripts/CommonDB/DB2zOS/S5CELLDB -PDS HEALDR.DDL2PDS.TEST -Component
WPS
```

6. Run the customized scripts using the tool of your choice. For example:

   SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

   DSNTEP2
   A sample dynamic SQL program provided with the DB2 for z/OS product.

   DBUtility.sh
   DBUtility.sh is a utility that is supplied with IBM Business Process Manager for z/OS and
   installed in the installation file system. For example: `/usr/lpp/zBPMPS/V7R5/bin/DBUtility.sh`.
   You can use this utility to create the database and storage groups, as well as to run the SQL to
   create the database tables later, from USS. **DBUtility.sh** uses ASCII input. Here is an example
   of the syntax used with the **DBUtility.sh** script:

```
/WebSphere/V7S03Z1/AppServer/profiles/default/bin/DBUtility.sh
createTable
-DdbStorageGroup=S3DBSTO
-DdbSchemaName=S3CELL
-DsqlScriptName.default=createTable_AppScheduler.sql
-DsqlScriptPath.default=/WebSphere/V7S03Z1/AppServer/profiles/default/dbscripts/CommonDB/DB2zOS/S3CELLDB
/createTable_AppScheduler.sql
-DdbType=DB2UDBOS390
-DdbName=S3CELLDB
-DprofileName=default
-DprofilePath=/WebSphere/V7S03Z1/AppServer/profiles/default
-DdbJDBCProperties=/wps/dbscripts/db2v9
-DdbConnectionLocation=DSN810PP
-DdbJDBCClasspath=/usr/lpp/db2910/db2910/jcc/classes
-DdbUserId=wsadmin
-DdbPassword=password
-DdbDelayConfig=false
-DdbCreateNew=false
-DdbHostName=winmvsp1.hursley.ibm.com
-DdbServerPort=448
>/tmp/output.out 2>>/tmp/error.out
```

7. Verify that the database, storage group, and tables have been created successfully with no errors by
   inspecting the output.

8. If you are creating a stand-alone configuration, verify the IBM Business Process Manager installation:

   a. Start the server.

   b. Open the administrative console by opening a browser window and typing the URL of the server
      that you want to view. For example:

      `http://server_name.domain_name:port_number/admin`

   c. Log in to the administrative console.

   d. Verify that you can see IBM Business Process Manager for z/OS on the Welcome page. You can
      click it for more information.

   e. Navigate around the console to check that the server has a status of started. Also check that all the
      applications are started, and that the messaging engines are started. If anything has failed to start,
      you can look in the server job logs for "SEVERE" or "WARNING" messages that provide details
      about the failure.

The DB2 databases and storage groups are created and populated with the necessary database objects,
such as tables and indexes.

If you are creating a stand-alone configuration, you can now deploy applications to the server.

If you are creating a network deployment configuration, you must create one or more empty nodes to
add to the deployment manager cell. See Configuring the software after a Custom installation to create
one Deployment manager and Custom profiles.

Creating the messaging engine data stores:

If the messaging engine data store has not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data store.

Before you create and run the SQL scripts:
* Create a cluster. For more information, see Creating a standardized network deployment configuration or Creating a customized network deployment configuration.
* Decide which service integration bus components you want to create in your network deployment configuration.

You must create and populate a messaging engine data source for each of the following components that you configure:
* Service Component Architecture system bus
* Service Component Architecture application bus
* IBM Process Server
* IBM Performance Data Warehouse
* Business Process Choreographer
* Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:
* All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
* All messaging engines have identical table space names. Therefore, either use a separate database for each messaging engine, or for a single database, ensure that the table space names are edited to make them unique within the database.

1. For each messaging engine, complete the following steps to generate the required database scripts:
   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.
   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.
   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   For more information, see Creating a database design file for a specific component by using the database design tool.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines. For more information, see "Creating a database design file for a stand-alone profile or deployment environment by using the database design tool" on page 372.

2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID you must grant a sub-set of DB2 privileges to the JCA authentication alias user ID.

The DDL for the Service Integration Bus already contains commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply any GRANT statements.

Use a schema name that is not the same as the JCA authentication alias to prevent the alias user ID having the power to drop tables. (The power to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to DROP tables.

If you want the IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the DDL and editing it to construct GRANT commands from the CREATE commands. Create GRANT commands like:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

Where *userid/sqlid* is the JCA authentication alias user ID.

Setting the correct schema name for the SIBs:

To ensure the SIB messaging engines can access the appropriate DB2 tables, set the correct schema name for the SIB messaging tables to use to access the DB2 tables.

Start the server (stand-alone server or deployment manager).

Use the administrative console to change the schema names.
1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each bus:
   a. Select **Messaging engines**, then click the name that is displayed.
   b. Click **Message store**.
   c. Change the value of **Schema name** to the name used when creating the DB2 tables for this SIB.
   d. Click **Apply**.
   e. Save your configuration changes.
4. Log out of the administrative console.
5. Stop, then restart the server.
6. Look in the output of the Adjunct job log for successful SIB messaging engine startup messages. For example:
   ```
   BBOO0222I: "BusName"
   CWSID0016I: Messaging engine MessagingEngineName is in state Started.
   ```

The schema name used by the SIB messaging tables to access the DB2 tables is changed.

Verifying the installation with DB2 for z/OS:

When verifying an installation with a DB2 for z/OS database, it is important to check the Servant and Adjunct job logs to see whether there are any error messages that might indicate problems accessing the data store.

1. Ask your DB2 system administrator to check the authorities that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration.

2. Ask your DB2 system administrator to check the storage group assignments and buffer pool usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message in a log but might cause problems later. It is better to resolve such problems now rather than when the system has been handed over to people to use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

3. Log in to the administrative console.

4. In the administrative console, check that all the applications are started, the messaging engines are started, and all the data sources can be accessed using the **Test Connection** option. If any application has failed to start, look in the Servant and Adjunct job logs for SEVERE or WARNING messages that provide detail about the failure.

   - If you see DB2 errors such as SQLCODE -204, in the administrative console, set the correct schema name or currentSQLID value in the custom properties section of the data sources. If the schema name is not the same as the user ID in the JCA authentication aliases, the SQL requests try to find tables qualified by the user ID in the JCA authentication alias.

   - If you see DB2 deadlock errors such as SQLCODE -913 Reason Code 00C90088, set the RRULOCK DB2 parameter to YES to prevent tablespace locks on IBM Business Process Manager tables.

If all the messaging engines have initialized correctly, and you do not see any other errors related to opening JDBC connections, you can continue to customize your configuration of IBM Business Process Manager.

Modifying the transaction log options for a DB2 database

When you configure DB2 for use with IBM Business Process Manager, you must modify the transaction log options.

1. Start a DB2 command line processor.

2. Run the following commands:

   ```
   CONNECT TO [DB_name]
   UPDATE DB CFG FOR DB_name USING LOGFILSIZ 4096 IMMEDIATE
   UPDATE DB CFG FOR DB_name USING LOGSECOND 64 IMMEDIATE
   CONNECT RESET
   ```

3. Stop and restart DB2.

Configuring a network deployment environment

After you have finished installation, you can build a network deployment configuration.

Creating a network deployment environment

You can create a network deployment environment by using either the Deployment Environment wizard or the administrative console.

The information in this section assumes that you have run the installer to perform a Custom installation, and have created the deployment manager and custom profiles.

Creating a standardized network deployment configuration:

After performing a Custom installation and creating the deployment manager and custom (managed node) profiles, you can create a standardized network deployment configuration.

The information in this section describes how to use the Deployment Environment wizard to create a *standardized* network deployment configuration. A standardized network deployment environment is a configuration created from the topology pattern templates packaged with the software.

The information in this section assumes that you have run the installer and have performed a Custom installation and that you have created the deployment manager and custom (managed node) profiles.

For information about using wsadmin to create a network deployment configuration, see *Creating deployment environments using the command line*.

Related concepts:

"Overview: Deployment environment topologies and patterns" on page 26
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 43
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Creating deployment environments using the command line" on page 410
You can use wsadmin to create a Process Server and Process Center deployment environment. The `createDeploymentEnvDef` and `generateDeploymentEnv` provide a command-line equivalent to creating the deployment environment using the deployment environment wizard.

Creating the Process Server deployment environment using a pattern:

After determining the pattern on which to base your network deployment configuration, use the Deployment Environment Configuration wizard to create the IBM BPM Advanced Process Server deployment environment that is based on the pattern.

Required security role for this task: When security and role-based authorization are enabled, you must log in to the administrative console as an administrator or configurator to perform this task.

You should have planned the patterns and features that you want to configure. For more information, see Planning a network deployment environment.

It is assumed that you have installed the product and that you have created the deployment manager profile and the associated nodes.

Additionally, one of the steps in the Deployment Environment Configuration wizard includes importing a database design document. The database design document defines the database configuration for the selected deployment environment features. IBM Business Process Manager includes a response-driven database design tool (DDT) that creates a database design document based on user inputs. In addition to creating the design document, the DDT provides an option to create the database tables as well. Typically, the person running the DDT would choose to create the database tables at that point. The document can then be used by the IBM Business Process Manager deployment environment wizard to configure the databases used in the deployment environment. For more information about the DDT and database configuration in general, see Configuring databases.

This task describes the procedure for creating a standardized deployment environment that is based on a specific pattern and uses the Deployment Environment Configuration wizard.

Note: If you make an error while you are working in the wizard, you can go back by clicking **Back**.

1. From the administrative console, go to the Deployment Environments page. For example, click **Servers** > **Deployment Environments**

2. Launch the Deployment Environment Configuration wizard by clicking **New** on the Deployment Environments page.

   a. The **Create a deployment environment based on a pattern** option is selected. **Create a deployment environment based on a pattern** is the system default and it is the option described in this topic.

Deployment environment patterns capture commonly used business integration topologies. A pattern provides you with a template for the deployment environment that you are creating.

Note: Patterns have a direct relationship to the products supported by the configured deployment manager. IBM Business Process Manager supports a specific set of patterns, with the *Remote messaging and remote support* pattern being the system default. If your deployment manager supports other products in addition to IBM Business Process Manager, additional patterns may apply. Consult product-specific documentation for information on patterns as they apply to the products.

For information on the types of patterns provided with IBM Business Process Manager, see Topology types and deployment environment patterns.

b. Enter a unique name for the deployment environment in the **Deployment environment name** field.

c. Optional: To view all of the configuration steps in the wizard, select **Detailed: Show all steps**.

If you choose **Fast path: Show only needed steps** the wizard displays only those pages that **do not** have assigned default values. Choose **Fast path: Show only needed steps** only if you are agreeable to accepting the system-provided default values for the deployment environment configuration.

This topic assumes that you have chosen **Detailed: Show all steps**

d. Click **Next** to display the Deployment Environment Features page.

3. On the Deployment Environment Features page, select the feature for the deployment environment and click **Next** to either view a list of compatible features, or to view a list of deployment environment patterns. Features represent the runtime processing capabilities of your deployment environment.

The list of available features on the Deployment Environment Features page is based on the deployment manager profile. If your deployment manager profile has been augmented to include other products alongside IBM Business Process Manager (for example, IBM Business Monitor , then the Deployment Environment Features page also lists these features.

If you have installed and configured a profile for IBM Business Process Manager, then the Deployment Environment Features page includes the following details:

- For IBM Business Process Manager Standard:
  - **BPMSPS**, for an IBM BPM Standard, Process Server deployment manager profile, which provides a Process Server deployment environment that supports business processes, human tasks, and business rules.
  - **BPMSPC**, for an IBM BPM Standard, Process Center deployment manager profile, which provides a Process Center deployment environment that supports business processes, human tasks, and business rules.
- For IBM Business Process Manager Advanced:
  - **WESB**, for WebSphere Enterprise Service Bus, which provides a deployment environment that supports mediations.
  - **BPMAPS**, for an IBM BPM Advanced, Process Server deployment manager profile, which provides a Process Server deployment environment that supports mediations, business processes, human tasks, Business Space functions, and business rules.
  - **BPMAPC**, for an IBM BPM Advanced, Process Center deployment manager profile, which provides a Process Center deployment environment that supports mediations, business processes, human tasks, Business Space functions and business rules.

The default value for the deployment environment feature matches the runtime capabilities of your deployment manager.

4. On the Select compatible deployment environment features page, select additional features as necessary and click **Next** to view the list of patterns associated with your primary and ancillary feature selections.

Note: The Select compatible deployment environment features page is displayed only if the deployment manager has been augmented with other business process management (BPM) features, such as IBM Business Monitor.

For an understanding of the relationship of features and compatible features, see the information on deployment environments in the Planning section.

5. On the Select the deployment environment pattern page, select the pattern for the selected deployment environment, then click **Next** to display the Select Nodes page.

    The list of patterns that display on the Deployment Environment Patterns page is dynamic. This list is activated by, and dependent on, the following environment conditions and configuration decisions:

    - The platform on which you have installed the software
    - The selections that you have made on the Select the deployment environment feature page and the Select compatible deployment environment features page.

    For a detailed description of the relationship of patterns to features, see Topology patterns and supported BPM product features

6. Optional: On the Select Nodes page, select the nodes to be included in the deployment environment then click **Next** to display the Clusters page.

    Select nodes that have the required capabilities for the environment you selected in step 3 on page 393. For example, if you selected **BPMSPC** as your Deployment Environment type, the nodes selected should address the capabilities of that environment type.

    Select at least one node for the deployment environment. For high-availability and failover environments, select at least two nodes. For scalability, select all nodes.

    To include a node, select the check box next to the node name. Use **Node Mapping** to map the selected node to another node name.

7. Optional: On the Clusters page, assign the required number of cluster members on each node for each cluster *type* (Application Deployment Target, Messaging Infrastructure and Supporting Infrastructure) of the deployment environment.

    By default one cluster member is assigned on each node for each function. You change the number by replacing the number in each column. If you are unfamiliar with the different cluster roles and functions provided by each type of cluster, see "Topology types and deployment environment patterns."

    A 0 (zero) value for a node means that the node does not contribute to the selected function, based on features that you have selected.

    After assigning cluster members, you can click **Next** to display the Cluster naming pages for each cluster type of the deployment environment. The Cluster naming sub-steps that display will vary depending on the deployment environment pattern selected.

    The system generates default values for cluster names and cluster member names.

    If you do not want to customize cluster names or cluster member names, you can use the wizard navigation pane to go directly to the REST Services page in a following step.

    Each substep page is structured in the same fashion, and is described in Customize the cluster names and cluster member names.

    a. Optional: Customize the cluster names and cluster member names.

        Use the Cluster Naming page to customize cluster names or cluster member names for the cluster type. There is one substep page for each cluster *type* in the pattern that you have selected. For example, if you selected a **Remote messaging and remote support pattern**, there are 3 sub-steps, one for each type of cluster (Application Deployment Target, Messaging Infrastructure and Supporting Infrastructure) in that pattern.

        The information on each substep page is as follows:

        Cluster

        A read-only field specifying the functional role of the cluster.

        The value varies depending on the cluster type, as follows:

- Application Deployment Target
- Messaging Infrastructure
- Supporting Infrastructure
- Web Application Infrastructure

For information on the functional role provided by each cluster type, see Topology types and deployment environment patterns

Cluster Name

Contains the system-generated default value for the cluster name.

The default values are based on a naming convention of **<Deployment Environment Name>.<Cluster type name>**, where**cluster type name** is one of the following values:

- AppTarget

  For clusters performing the role of application deployment target
- Messaging

  For clusters performing the role of messaging infrastructure
- Support

  For clusters performing the role of supporting infrastructure
- Web

  For clusters performing the role of supporting web applications.

  Note: This cluster type name applies for BPM configurations in which WebSphere Business Monitor is the primary feature / product.

Cluster Member Name

Accept the system-generated default value or specify a name of your choosing.

The default value for the cluster member name is based on the following naming convention: **<cluster name>.<node name>.<node number sequence>** .

The number of cluster member names that display in the table match the number of cluster members that you entered for the cluster type column and node row on the Clusters page. See the preceding step for the Clusters page.

8. On the REST Services page, configure service endpoints for Representational State Transfer (REST) application programming interfaces (APIs).

   If you want widgets to be available in Business Space, you must configure the REST service endpoints for those widgets.

   a. Configure a full URL path for all REST services by selecting either **https://** or **http://** from the **Protocol** list.

   b. Enter a name in the **Host Name or Virtual Host in a Load-Balanced Environment** field.

   c. In the **Port** field, enter the port that a client needs to communicate with the server or cluster.

   d. In the table of REST services, if you want to modify the description of the REST service endpoint, overtype the entry in the Description field. The other fields are read-only.

   e. Click **Next** to go to the Import the database configuration page.

9. Optional: On the Import the database configuration page, click **Browse** to go the database design document or enter the path to the database design document and then click **Next** to go to the Data sources page. The design document can be based on a database design that you created using the database design tool (DDT), or it can be the supplied design document based on the pattern and feature that you have selected.

   Note: The database design document that you import for the deployment environment does not change the commonDB created at Profile Creation time.

10. Required: On the Database page, configure the database parameters for data sources of the deployment environment, then click **Next** to go to the Security page.

   Note: The database specified in this panel must already exist. Deployment environment configuration never creates a new database.

   For DB2 and SQL Server databases, IBM Process Server and IBM Performance Data Warehouse should not use the same database as the rest of the components. However, if you are using an Oracle database, IBM Process Server and IBM Performance Data Warehouse can use the same database instance, but should use different users.

   On this page, define the database information for the components that are included in this deployment environment. Where possible, the wizard supplies default information for the parameters, but change those values to match the values that you defined when you planned the environment.

   Note: If you imported a database design document, the information on the Database page reflects the data source configuration as it exists in the database design document that you imported.

   Whether or not this step displays for a fast path deployment environment configuration is conditional. This step displays for a fast path deployment environment configuration if more than one database has been defined.

   This step always displays if you are using DB2 for z/OS or an Oracle database provider.

   Note: The default schema names that are displayed on this page might conflict with your site naming convention or might conflict with existing schemas. As such, it is likely that you will need to change the schema name. Pay close attention to the values specified to avoid potential naming conflicts.

   Oracle database considerations:
   - Make sure that the username/schema name are exactly the same. The user specified should exist in the database before generating the environment.

   SQL Server considerations:
   - Make sure that the username/schema exist before the configuration is done. The schema value should be the default schema for the user chosen.

   For a production environment, you should set the same values for **User name** and **Schema name** and you should deselect **Create tables**. For a production environment, create the required schemas manually and use the SQL files generated to create the tables.

   Note: You cannot select **Create tables** for Business Space (the option is unavailable for selection). The SQL files for Business Space need to be run manually. For information on running the SQL manually for Business Space, see *Configuring Business Space database tables*.

   You can edit all key parameters, such as the database name, whether or not to create tables, the data source runtime user name, and the password for the deployment environment.

   You can select which database to use for the given component.

   DB2 for z/OS: The **Create tables** option cannot be used if you are using a DB2 for z/OS database provider.

   Steps that cannot be completed through the Deployment Environment Configuration wizard, and which need to be completed manually, are listed on the Deferred Configuration page.

11. On the Process Server page, set the values for the Process Server configuration as follows:
   - **Environment name**

     Enter an environment name of the Process Server.

     An environment name is the name by which this server or cluster will be known to a Process Center user.
   - **Environment type**

From the pull-down list, select the Environment type for the Process Server you are configuring.

The Environment type refers to how the Process Server is used. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Server you are configuring, will be accessed and used to review content and new functionality.

There are three types of environments available for selection:

Production
> Select **Production** if the server will serve in a production capacity.

Stage Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.

Test Select **Test** if the server you are configuring will be used as a testing environment.

- **Use server offline**

  Indicate whether the server you are configuring is an offline server.

  An offline server is a Process Server that is not connected to the Process Center.

  Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name or virtual host in a load-balanced environment**

  Type the host or virtual host that this Process Server needs to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**

  Type the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

12. On the Security page, configure the authentication aliases WebSphere uses when accessing secure components

   You can change the authentication alias user name and password on this page. These aliases are used to access secure components but do not provide access to data sources

13. On the Business Process Choreographer page, set parameters for the Business Process Choreographer configuration and then click **Next** to display the System web applications page. On this page you specify the values for:
   - Security roles
   - Authentication aliases

14. Optional: On the System web applications page, set the context root for component-based web applications in your deployment environment or accept the system-provided default values for the context roots. Then click **Next** to display the Summary page.

   The System web applications page displays for deployment environments using the Remote messaging, support and web applications pattern.

   The table contains the following control information.

   Web Application
   > The name of the Web application.

Some of the components that are part of the deployment environment you are creating contain web applications. The **Web application** column can include the following components:

- Business Space
- Business Process Choreographer Explorer
- Business Rules Manager

Context Root

The current value of the context root for the component.

By default, the default context root for the web application applies. You can change the context roots by typing over the value in the **Context Root** field.

Note: The Business Space context root is read only and cannot be edited.

15. Verify that the information on the Summary page is correct and perform the following substeps:

a. Optional: If you do not want to save the deployment environment configuration, you can click **Cancel**.

b. Optional: If you want to exit without generating the configuration, click **Finish**.

To get back to the panel (if you exited without completing), perform the following from the administrative console: **Deployment Environments** > *name of deployment environment* > **Generate Environment** .

c. To save the deployment environment configuration, click **Finish** and from within the Messages window, click **Save**.

Clicking **Save** saves the deployment environment to the master configuration. If an error occurs during deployment environment generation, the configuration settings are saved to the master configuration.

d. Check for deferred configuration steps

Select **Deployment Environments** > *name of deployment environment* > **Deferred Configuration**

You need to address any existing deferred configuration steps before starting the Deployment Environment.

e. If you are satisfied with the deployment environment configuration and you have addressed any of the deferred configuration steps, click **Finish and Generate Environment** to save and complete the configuration of the deployment environment.

When the configuration completes, you can examine the configuration files to view the changes.

Either save the changes to the master configuration or discard them.

Related concepts:

"Overview: Deployment environment topologies and patterns" on page 26
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 43
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Completing the database configuration" on page 415
Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

"Loading the database with system information" on page 384
The profile creation process collects all database parameters related to the profile that you are creating and writes this configuration data to an XML file. You must run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Center deployment environment using a pattern:

After determining the pattern on which to base your network deployment configuration, use the Deployment Environment Configuration wizard to create the IBM® Process Center deployment environment that is based on the pattern.

On the administrative console of the deployment manager navigate to **Servers > Deployment Environments**.

Required security role for this task: When security and role-based authorization are enabled, you must log in to the administrative console as an administrator or configurator to perform this task.

The procedure for creating deployment environments using the deployment environment wizard includes steps for selecting patterns and features, and therefore it is assumed that you have read and understood the information on patterns and features documented in the planning section.

It is assumed that you have installed the product and that you have created the deployment manager profile and the associated nodes.

Additionally, one of the steps in the Deployment Environment Configuration wizard includes importing a database design document. The database design document defines the database configuration for the selected deployment environment features. IBM Business Process Manager includes a response-driven database design tool (DDT) that creates a database design document based on user inputs. The document then can be used by the DDT to create the database scripts and by the IBM Business Process Manager deployment environment wizard to configure the databases used in the deployment environment. For more information on the DDT and for more information on database configuration in general, see *Configuring databases*.

This task describes the procedure for creating a deployment environment that is based on a specific pattern and uses the Deployment Environment Configuration wizard.

Note: If you make an error while you are working in the wizard, you can go back by clicking **Back**.

1. From the administrative console, go to the Deployment Environments page by clicking **Servers** > **Deployment Environments** .
2. Launch the Deployment Environment Configuration wizard by clicking **New** on the Deployment Environments page.

a. The **Create a deployment environment based on a pattern** option is selected. **Create a deployment environment based on a pattern** is the system default and it is the option described in this topic.

Deployment environment patterns capture commonly used business integration topologies. A pattern provides you with a template for the deployment environment that you are creating.

Note: Patterns have a direct relationship to the products supported by the configured deployment manager. IBM Business Process Manager supports a specific set of patterns, with the *Remote messaging and remote support* pattern being the system default. If your deployment manager supports other products in addition to IBM Business Process Manager, additional patterns may apply. Consult product-specific documentation for information on patterns as they apply to the products.

For information about the patterns included with and supported by IBM Business Process Manager, see Overview: Deployment environment topologies and patterns.

b. Enter a unique name for the deployment environment in the **Deployment environment name** field.

c. Optional: To view all of the configuration steps in the wizard, select **Detailed: Show all steps**.

If you choose **Fast path: Show only needed steps** the wizard displays only those pages that **do not** have assigned default values. Choose **Fast path: Show only needed steps** only if you are agreeable to accepting the system-provided default values for the deployment environment configuration.

This topic assumes that you have chosen **Detailed: Show all steps**

d. Click **Next** to display the Deployment Environment Features page.

3. On the Deployment Environment Features page, select the feature for the deployment environment and click **Next** to either view a list of compatible features, or to view a list of deployment environment patterns. Features represent the runtime processing capabilities of your deployment environment.

The list of available features on the Deployment Environment Features page is based on the deployment manager profile. If your deployment manager profile has been augmented to include other products alongside IBM Business Process Manager (for example, IBM Business Monitor , then the Deployment Environment Features page also lists these features.

If you have installed and configured a profile for IBM Business Process Manager, then the Deployment Environment Features page includes the following:

- For IBM Business Process Manager Standard:
  - **BPMSPS**, for an IBM BPM Standard, Process Server deployment manager profile, which provides a Process Server deployment environment that supports business processes, human tasks, and business rules.
  - **BPMSPC**, for an IBM BPM Standard, Process Center deployment manager profile, which provides a Process Center deployment environment that supports business processes, human tasks, and business rules.
- For IBM Business Process Manager Advanced:
  - **WESB**, for WebSphere Enterprise Service Bus, which provides a deployment environment that supports mediations.
  - **BPMAPS**, for an IBM BPM Advanced, Process Server deployment manager profile, which provides a Process Server deployment environment that supports mediations, business processes, human tasks, Business Space functions and business rules.
  - **BPMAPC**, for an IBM BPM Advanced, Process Center deployment manager profile, which provides a Process Center deployment environment that supports mediations, business processes, human tasks, Business Space functions and business rules.

4. On the Select compatible deployment environment features page, select additional features as necessary and click **Next** to view the list of patterns associated with your feature selections.

Note: The Select compatible deployment environment features page is displayed only if the deployment manager has been augmented with other business process management (BPM) features, such as IBM Business Monitor.

For an understanding of the relationship of features and compatible features, see the information on deployment environments in the Planning section.

5. On the Select the deployment environment pattern page, select the pattern for the selected deployment environment, then click **Next** to display the Select Nodes page.

   The list of patterns that display on the Deployment Environment Patterns page is dynamic. This list is activated by, and dependent on, the following environment conditions and configuration decisions:

   - The platform on which you have installed the software
   - The selections that you have made on the Select the deployment environment feature page and the Select compatible deployment environment features page.

6. Optional: On the Select Nodes page, select the nodes that you want to include in this deployment environment, then click **Next** to display the Clusters page.

   Select nodes that have the required capabilities for the environment you selected in step 3 on page 400. For example, if you selected **BPMSPC** as your Deployment Environment type, the nodes selected should address the capabilities of that environment type.

   Select at least one node for the deployment environment. For high-availability and failover environments, select at least two nodes. For scalability, select all nodes.

   To include a node, select the check box next to the node name. Use **Node Mapping** to map the selected node to another node name.

7. Optional: On the Clusters page, assign the required number of cluster members on each node for each cluster *type* (Application Deployment Target, Messaging Infrastructure and Supporting Infrastructure) of the deployment environment.

   By default one cluster member is assigned on each node for each function. You change the number by replacing the number in each column. If you are unfamiliar with the different cluster roles and functions provided by each type of cluster, see "Topology types and deployment environment patterns."

   A 0 (zero) value for a node means that the node does not contribute to the selected function, based on features that you have selected.

   After assigning cluster members, you can click **Next** to display the Cluster naming pages for each cluster type of the deployment environment. The Cluster naming substeps that display will vary depending on the deployment environment pattern selected.

   The system generates default values for cluster names and cluster member names.

   If you do not want to customize cluster names or cluster member names, you can use the wizard navigation pane to go directly to the REST Services page in a following step.

   a. Optional: Customize the cluster names and cluster member names.

      Use the Cluster Naming page to customize cluster names or cluster member names for the cluster type. There is one substep page for each cluster *type* in the pattern that you have selected. For example, if you selected a **Remote messaging and remote support pattern**, there are 3 substeps, one for each type of cluster (Application Deployment Target, Messaging Infrastructure and Supporting Infrastructure) in that pattern.

      The information on each substep page is as follows:

Field	Description	Value
Cluster	A read-only field specifying the functional role of the cluster.	The value varies depending on the cluster type, as follows: • Application Deployment Target • Supporting Infrastructure • Messaging Infrastructure • Web Application Infrastructure For information on the functional role provided by each cluster type, see Topology types and deployment environment patterns

Cluster name	The system-generated default value for the cluster name.	The default values are based on a naming convention of *Deployment Environment Name.Cluster type name*, where *Cluster type name* is one of the following values:
		• AppTarget
		  For clusters performing the role of application deployment target
		• Messaging
		  For clusters performing the role of messaging infrastructure
		• Support
		  For clusters performing the role of supporting infrastructure
		• Web
		  For clusters performing the role of supporting web applications.
		  Note: This cluster type name applies for BPM configurations in which WebSphere Business Monitor is the primary feature / product.

Cluster member name	The system-generated default value for the cluster member name. Servers that are a part of a cluster are called cluster members.	Accept the system-generated default value or specify a name of your choosing. The default value for the cluster member name is based on the following naming convention: *cluster name.node name.node number sequence*. The number of cluster member names that display in the table match the number of cluster members that you entered for the cluster type column and node row on the Clusters page.

8. On the System REST Service endpoints page, configure service endpoints for Representational State Transfer (REST) application programming interfaces (APIs).

   If you want widgets to be available in Business Space, you must configure the REST service endpoints for those widgets.

   a. Configure a full URL path for all REST services by selecting either **https://** or **http://** from the **Protocol** list.

   b. Enter a name in the **Host Name or Virtual Host in a Load-Balanced Environment** field.

c. In the **Port** field, enter the port that a client needs to communicate with the server or cluster.

d. In the table of REST services, if you want to modify the description of the REST service endpoint, overtype the entry in the Description field. The other fields are read-only.

e. Click **Next** to go to the Import the database configuration page.

9. Optional: On the Import the database configuration page, click **Browse** to go the database design document or enter the path to the database design document and then click **Next** to go to the Data sources page. If you import a design document, the information from the design document is reflected on the Database page of the wizard. The design document can be based on a database design that you created using the database design tool (DDT), or it can be the supplied design document based on the pattern and feature that you have selected.

Note: The database design document that you import for the deployment environment does not change the commonDB created at Profile Creation time.

10. Required: On the Database page, configure the database parameters for data sources of the deployment environment, then click **Next** to go to the Security page.

Note: The database specified in this panel must already exist. Deployment environment configuration never creates a new database.

For DB2 and SQL Server databases, IBM Process Server and IBM Performance Data Warehouse should not use the same database as the rest of the components. However, if you are using an Oracle database, IBM Process Server and IBM Performance Data Warehouse can use the same database instance, but should use different users.

On this page, define the database information for the components that are included in this deployment environment. Where possible, the wizard supplies default information for the parameters, but change those values to match the values that you defined when you planned the environment.

Note: If you imported a database design document, the information on the Database page reflects the data source configuration as it exists in the database design document that you imported. If you make changes to the data source configuration after importing a database design document, your changes might be incompatible with the DDL generated by the database design tool and the original values.

Whether or not this step displays for a fast path deployment environment configuration is conditional. This step displays for a fast path deployment environment configuration if more than one database has been defined.

This step always displays if you are using DB2 for z/OS or an Oracle database provider.

Note: The default schema names that are displayed on this page might conflict with your site naming convention or might conflict with existing schemas. As such, it is likely that you will need to change the schema name. Pay close attention to the values specified to avoid potential naming conflicts.

Oracle database considerations:

• Make sure that the username/schema name are exactly the same. The user specified should exist in the database before generating the environment.

SQL Server considerations:

• Make sure that the username/schema exist before the configuration is done. The schema value should be the default schema for the user chosen.

For a production environment, you should set the same values for **User name** and **Schema name** and you should deselect **Create tables**. For a production environment, create the required schemas manually and use the SQL files generated to create the tables.

Note: You cannot select **Create tables** for Business Space (the option is unavailable for selection). The SQL files for Business Space need to be run manually. For information on running the SQL manually for Business Space, see *Configuring Business Space database tables*.

You can edit all key parameters, such as the database name, whether or not to create tables, the data source runtime user name, and the password for the deployment environment.

You can select which database to use for the given component.

DB2 for z/OS: The **Create tables** option cannot be used if you are using a DB2 for z/OS database provider.

Steps that cannot be completed through the Deployment Environment Configuration wizard, and which need to be completed manually, are listed on the Deferred Configuration page.

11. On the Process Center page, set the values for the Process Center configuration as follows:

- **Environment name**

  Enter an environment name of the Process Server.

  An environment name is the name by which this server or cluster will be known to a Process Center user.

- **Environment type**

  From the pull-down list, select the Environment type for the Process Center you are configuring.

  The Environment type refers to how the Process Center is used. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Center you are configuring, will be accessed and used to review content and new functionality.

  There are three types of environments available for selection:

  Production
  > Select **Production** if the server will serve in a production capacity.

  Stage   Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.

  Test   Select **Test** if the server you are configuring will be used as a testing environment.

- **Use server offline**

  Indicate whether the server you are configuring is an offline server.

  An offline server is a Process Server that is not connected to the Process Center.

  Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name or virtual host in a load-balanced environment**

  Type the host or virtual host that this Process Server needs to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**

  Type the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

12. On the Security page, configure the authentication aliases WebSphere uses when accessing secure components

You can change the authentication alias user name and password on this page. These aliases are used to access secure components but do not provide access to data sources

13. On the Business Process Choreographer page, set parameters for the Business Process Choreographer configuration and then click **Next** to display the System web applications page. On this page you specify the values for:
    - Security roles
    - Authentication aliases

14. Optional: On the System web applications page, set the context root for component-based web applications in your deployment environment or accept the system-provided default values for the context roots. Then click **Next** to display the Summary page.

    The System web applications page displays for deployment environments using the Remote messaging, support and web applications pattern.

    The table contains the following control information.

    Web Application
    The name of the web application.

    Some of the components that are part of the deployment environment you are creating contain web applications. The **Web application** column can include the following components:
    - Business Space
    - Business Process Choreographer Explorer
    - Business Rules Manager

    Context Root
    The current value of the context root for the component.

    By default, the default context root for the web application applies. You can change the context roots by typing over the value in the **Context Root** field.

    Note: The Business Space context root is read only and cannot be edited.

15. Verify that the information on the Summary page is correct and perform the following substeps:
    a. Optional: If you do not want to save the deployment environment configuration, you can click **Cancel**.
    b. Optional: If you want to exit without generating the configuration, click **Finish**.
    c. To save the deployment environment configuration, click **Finish** and from within the Messages window, click **Save**.

       Clicking **Save** saves the deployment environment to the master configuration. If an error should occur during deployment environment generation, the configuration settings will have been saved to the master configuration.
    d. Check for deferred configuration steps

       Select **Deployment Environments** > *name of deployment environment* > **Deferred Configuration**

       You need to address any existing deferred configuration steps before starting the Deployment Environment.
    e. If you are satisfied with the deployment environment configuration and you have addressed any of the deferred configuration steps, click **Finish and Generate Environment** to save and complete the configuration of the deployment environment.

When the configuration completes, you can examine the configuration files to view the changes.

Either save the changes to the master configuration or discard them.

Related concepts:

"Overview: Deployment environment topologies and patterns" on page 26
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 43
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Completing the database configuration" on page 415
Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

"Loading the database with system information" on page 384
The profile creation process collects all database parameters related to the profile that you are creating and writes this configuration data to an XML file. You must run the `bootstrapProcessServerData` command before you try to start or use the IBM Business Process Manager server.

Creating a customized network deployment configuration:

After you perform a custom installation and create the deployment manager and custom (managed node) profiles, you can create a customized network deployment configuration.

The information in this section describes how to use the administrative console to create a *customized* network deployment configuration. A customized network deployment environment is a configuration that you create from the administrative console, as opposed to a configuration from the Deployment Environment wizard.

This section assumes that the following information is true:

- You have run the installer to create a Custom installation.
- You have created the deployment manager and custom (managed node) profiles.
- You understand the differences between creating a standardized network deployment environment and a customized network deployment environment.
- You are familiar with network deployment topologies and configurations and the administrative console.

Important: Before you create a customized network deployment configuration, consider using the Deployment Environment wizard to create your network deployment environment.

Any operation that you can perform from the administrative console can also be performed with wsadmin. Additionally, command assistance is available for a subset of administrative console actions. When available, command assistance displays the wsadmin scripting command for the last console action that you performed. For information about command assistance, see Administrative console actions with command assistance.

Creating and configuring servers and clusters:

You can use the administrative console to create and configure the servers and clusters for IBM Business Process Manager.

The information in this section describes how to create servers and clusters for IBM Business Process Manager manually using the administrative console.

Creating a cluster:

The following instructions explain how to create a cluster with one cluster member. The benefit of using the administrative console to create a cluster is that you can undo your changes as you go and you can use a graphical user interface.

Before you create a cluster using the administrative console, start the deployment manager.

The following procedure describes how to create a cluster with one cluster member using the administrative console. Note that the tasks performed from the administrative console that are described in this topic can also be performed using administrative scripting. For information on the **createCluster** parameters, see ClusterConfigCommands command group for the AdminTask object in the WebSphere Application Server information center.

For information on using the wsadmin tool to create cluster members, see Creating cluster members using scripting.

Consider to create a cluster even if a single server is currently sufficient for your high availability and scalability requirements because it is easier to add more servers to the cluster later.

1. Log in to the administrative console and navigate to **Servers** > **Clusters** > **WebSphere application server clusters**.
2. Click **New** to display the Create new cluster page.
3. From the Create new cluster page, enter basic cluster information:
   a. Type a name for the cluster in the **Cluster name** field.
   b. Select **Prefer local** if you want to enable host-scoped routing optimization. This option is enabled by default. When this option is enabled, if possible, EJB requests are routed to the client host. This option improves performance because client requests are sent to local enterprise beans.

      Note: If you enable the preferLocal optimization, the deployment manager must be running to affect the configuration. If the deployment manager is shut down, preferLocal optimization is not performed and requests might be dispersed across all the members of the cluster

   c. Select **Configure HTTP session memory-to-memory** replication if you want a memory-to-memory replication domain created for this cluster.

      The replication domain is given the same name as the cluster and is configured with the default settings for a replication domain. When the default settings are in effect, a single replica is created for each piece of data and encryption is disabled. Also, the Web container for each cluster member is configured for memory-to-memory replication.

      To change these settings for the replication domain, click **Environment** > **Replication domains** > *replication_domain_name*. To modify the Web container settings, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* > **Clusters members** > *cluster_member_name*. Then, in the **Container settings** section, click **Web container settings** > > **Web container** > **Session management** > **Distributed environment** settings in the administrative console. If you change these settings for one cluster member, you might also need to change them for the other members of this cluster.
4. Click **Next** to go to the Create first cluster member page.
5. From the Create first cluster member page, enter information about the cluster member.
   a. Enter the member name in the **Member name** field
   a. From the **Select node** list, click the node in which you want to define the server.
   b. In the **Weight** field, enter the weight value for the cluster member.

      The weight value controls the amount of work that is directed to the application server. If the weight value for this server is greater than the weight values that are assigned to other servers in

the cluster, then this server receives a larger share of the workload. The weight value represents a relative proportion of the workload that is assigned to a particular application server. The value can range from 0 to 20.

- On a **z/OS system** weight is used to balance some of the workload types, but others are balanced by the z/OS system. For HTTP requests, weights are used to distribute HTTP traffic between the Web server plug-in and the controller handling the clustered application server. Assign a higher weight value to the application server that should receive the HTTP traffic.

- For Web services calls, information is transferred from a servant in one application server to a controller in another application server. The application server that receives the call has the highest weight value.

- Weight has no affect on Internet Inter-ORB Protocol (IIOP) requests. IIOP requests are distributed to the correct application server using the sysplex distributor.

c. Select **Generate unique HTTP ports** (the default option) if you want to generate unique port numbers for every HTTP transport that is defined in the source server.

When this option is selected, this cluster member does not have HTTP transports or HTTP transport channels that conflict with any of the other servers that are defined on the same node. If you clear the **Generate unique HTTP ports** check box, all of the cluster members will share the same HTTP ports.

6. From the section, **Select basis for first cluster member**, select from the following options:

- Create the member using an application server template

  This is the typical way of creating a cluster. Select **defaultProcessServer**.

  If you select this option and click **Next**, a blank form is displayed which you can use to define additional cluster members. The server you have just created is listed at the bottom of the screen.

  a. Click **Next**.

  b. Check the details on the summary screen and click **Next**.

  c. Save your configuration changes.

     The cluster you have just created is displayed in the list.

  d. Customize the port numbers to suit your configuration.

- Create the member using an existing application server as a template

  This option is not supported.

- Create the member by converting an existing application server

  Note: Do not select this option. WebSphere Application Server added a new parameter named **resourcesScope** to the createCluster and createClusterMember commands that allows you to control how the resources will be processed when the first cluster member is added to a cluster. Those parameters are described in the technote titled New parameter named resourcesScope was added to the createCluster and createClusterMember commands.

  It is required to use the **resourcesScope** parameter with the value **cluster** for IBM Business Process Manager. The **resourcesScope** parameter is not currently exposed in the administrative console. Using the administrative console to create a cluster using an existing single server as the first cluster member is not supported on IBM Business Process Manager. Selecting this option will result in the following error message in the administrative console or the SystemOut.log of the deployment manager:

  `resourcesScope parameter needs to be set to 'cluster' if creating a cluster from an existing server`

  Using the command line to create a cluster using an existing single server as the first cluster member is valid. You must set the value of the **resourcesScope** to **Cluster**. For example,

```
$AdminTask createCluster {-clusterConfig
{-clusterName newcluster -preferLocal true}
-convertServer {-serverNode NODE1Node01 -serverName testserver
-resourcesScope cluster}}
```

For information on the **createCluster** parameters, see ClusterConfigCommands command group for the AdminTask object in the WebSphere Application Server information center.

For information on using the wsadmin tool to create cluster members, see Creating cluster members using scripting.

- None

  Works always.

7. Click **Next.**

8. Create additional cluster members.

   Before you create additional cluster members, check the configuration settings of the first cluster member. These settings are displayed at the bottom of the Create additional cluster members panel of the Create a new cluster wizard. For each additional member that you want to create:

   a. Specify a unique name for the member. The name must be unique within the node.

   b. Select the node to which you want to assign the cluster member.

   c. Specify the weight you want given to this member. The weight value controls the amount of work that is directed to the application server. If the weight value for the server is greater than the weight values that are assigned to other servers in the cluster, then the server receives a larger share of the workload. The value can range from 0 to 20.

   d. Select **Generate unique HTTP ports** if you want to generate unique port numbers for every HTTP transport that is defined in the source server.

   e. Click **Add member**. You can edit the configuration settings of any of the newly created cluster members other than the first cluster member, or you can create additional cluster members. Click **Previous** to edit the properties of the first cluster member. The settings for the first cluster member become the settings for the cluster member template that is automatically created when you create the first cluster member.

9. When you finish creating cluster members, click **Next**.

10. View the summary of the cluster and then click **Finish** to create the cluster, click **Previous** to return to the previous wizard panel and change the cluster, or click **Cancel** to exit the wizard without creating the cluster.

11. To further configure a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** , and then click the name of the cluster. Only the **Configuration** and **Local Topology** tabs display until you save your changes.

12. Click **Review** to review your cluster configuration settings. Repeat the previous step if you need to make additional configuration changes.

13. If you do not want to make any additional configuration changes, select **Synchronize changes with Nodes** and then click **Save**. Your changes are saved and synchronized across all of your nodes.

    Note: If you click **Save** , but do not select **Synchronize changes with Nodes**, when you restart the cluster, the product does not start the cluster servers because it cannot find them on the node. If you want to always synchronize your configuration changes across your nodes, you can select Synchronize changes with Nodes as one of your console preferences.

14. Restart the cluster.

The cluster is created with your chosen server in the selected managed node as the first cluster member.

Creating a new server:

Most installations require several servers to handle the application serving needs of the production environment. You can use the command-line tool or the administrative console to create the servers you need.

Determine if you want to include the new server in a cluster. If this server is going to be part of a cluster, you must create the server with the Create a new cluster wizard instead of the Create a new application server wizard.

Important: This task creates a managed server. If you want a stand-alone server, do not follow these steps. Instead, create a stand-alone server profile.

To create a new managed server, perform the following steps.

Follow the instructions in Creating application servers, selecting the **defaultProcessServer** template or a suitable user-defined template from the Select a server template page. **Restriction:** The "Start components as needed" capability is not supported.

Configure the components you need on the server. See **Configuring components** for more information.

Creating deployment environments using the command line:

You can use wsadmin to create a Process Server and Process Center deployment environment. The `createDeploymentEnvDef` and `generateDeploymentEnv` provide a command-line equivalent to creating the deployment environment using the deployment environment wizard.

Related concepts:

"Creating a standardized network deployment configuration" on page 391
After performing a Custom installation and creating the deployment manager and custom (managed node) profiles, you can create a standardized network deployment configuration.

"Overview: Deployment environment topologies and patterns" on page 26
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 43
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Completing the database configuration" on page 415
Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

"Creating database design files by using the database design tool" on page 372
Use the database design tool to create and generate a design of your database configuration. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating deployment environment definitions using the command line:

You can create a deployment environment definition using the `wsadmin` command. Running **createDeploymentEnvDef** provides the definition of the deployment environment.

You must be on the deployment manager to create the deployment environment definition.

Required security role for this task: When security and role-based authorization are enabled, you must use a userid and password with administrator or operator authority to perform this task.

IBM Business Process Manager supports a specific set of patterns, **Remote messaging and remote support** being the pattern to employ for a network deployment production environment. If your deployment manager supports other products in addition to IBM Business Process Manager, the patterns for those products may apply. Consult product-specific documentation for information on patterns as they apply to the products.

This task creates a deployment environment definition that is based on a specific pattern and uses the **wsadmin** command.

You can use the **wsadmin** command to create the same deployment environment as you can create from the administrative console. This capability allows you to run the administrative task to create a deployment environment definition with all the default values based on an existing configuration. The existing configuration being the configuration that you created at profile creation time. The command also includes an optional property that imports a database design document. The database design document holds the database configuration for the topology you are creating.

When you generate the deployment environment, the information about whether to create tables is taken from the design document. Make sure that the createTables parameter is correctly set in the database design file that you specify.

Important: If you use the createTables parameter, the databases must already exist. Do not use createTables for a production environment where you want to customize the generated database scripts. Do not use createTables if you have a remote database server.
For DB2 and SQL Server databases, IBM Process Server and IBM Performance Data Warehouse should not use the same database as the rest of the components. However, if you are using an Oracle database, the IBM Process Server and IBM Performance Data Warehouse can use the same database instance, but should use different users.

For Oracle databases, make sure that the user name and schema name are exactly the same. The user must exist in the database before you generate the environment.

For SQL Server databases, make sure that the user name and schema exist before the configuration is done. The schema value must be the default schema for the user chosen.

For a production environment, set the same values for user name and schema name and do not select createTables. Create the required schemas manually and use the generated SQL files to create the tables.

A deployment environment definition describes the specific component, cluster/node/server configuration, resources and related configuration parameters that make up a deployment environment. This can also be referred to as an instance of a deployment environment configuration. A deployment environment configuration can be exported into a deployment environment definition. You can import a deployment environment definition to add a new deployment environment configuration to your system.

1. Open a command window.

   The **wsadmin** command can be found in either the *install_root*/profiles/*dmgr profile*/bin directory, or the *install_root*/bin directory.

2. At the command prompt, enter the **wsadmin** command to enter the **wsadmin** environment.

3. Use the **createDeploymentEnvDef** command to create the deployment environment definition with a specific name for a particular runtime and pattern.

   Note: If administrative security is on, you will be prompted for a user ID and password, if you do not supply it in the command.

This example creates a deployment environment definition for a remote messaging and remote support pattern on the IBM Business Process Manager runtime, with myDepEnv on the host myDmgr with administrative security enabled. The example imports a database design document named **bpmps.nd.topology.dbDesign**:

Note: The value you assign to *-topologyRuntime* varies depending on the IBM BPM configuration (Advanced or Standard) and the environment selection. For example:

• For IBM BPM Standard, **-topologyRuntime** can be:

- **BPMSPS**, for IBM BPM Standard Process Server
- **BPMSPC**, for IBM BPM Standard Process Center
- For IBM BPM Advanced, **-topologyRuntime** can be:
  - **BPMAPS**, for IBM BPM Advanced Process Server
  - **BPMAPC**, for IBM BPM Advanced Process Center

```
wsadmin -connType SOAP -host myDmgr -port 8879
> $AdminTask createDeploymentEnvDef { -topologyName topOne
-topologyPattern RemoteMessagingAndSupport
-topologyRuntime BPMSPS -dbDesign C:\dbDesigns\bpmsps.nd.topology.dbDesign}
> $AdminConfig save
```

Note: If you disable administrative security, you do not need to provide a user ID and password.

After you have imported or created a deployment environment on a deployment manager, you can configure the deployment environment using the generateDeploymentEnv command.

Related concepts:

"Overview: Deployment environment topologies and patterns" on page 26
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 43
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Completing the database configuration" on page 415
Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

"Creating database design files by using the database design tool" on page 372
Use the database design tool to create and generate a design of your database configuration. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Generating deployment environments using the command line" on page 413
You can generate deployment environments using the **wsadmin** interface. This capability allows you to configure multiple deployment environments unattended on a deployment manager using a script.

Adding nodes to a deployment environment definition using the command line:

You can add nodes to a deployment environment definition using the **wsadmin** command.

The task assumes that the node has been federated to the deployment manager.

This command to add a node to the deployment environment definition will fail if the topology is already configured.

You must be on the deployment manager to add nodes to the deployment environment.

Required security role for this task: When security and role-based authorization are enabled, you must use a userid and password with administrator or operator authority to perform this task.

This task adds a federated node to a deployment environment definition and uses the **wsadmin** command.

1. Open a command window.

   The **wsadmin** command can be found in either the *install_root*/profiles/*dmgr profile*/bin directory, or the *install_root*/bin directory.

2. At the command prompt, enter the **wsadmin** command to enter the **wsadmin** environment.

3. Enter the **addNodeToDeploymentEnvDef** command to add the node to the deployment environment definition.

   Note: If administrative security is on, you will be prompted for a user ID and password, if you do not supply it in the command.

This example adds a node (**MyNode**) to deployment environment definition (**myDepEnv**) with administrative security enabled:

Attention: If you are adding a node to a single cluster topology pattern, the value for **-toplogyRole** must be set to **ADT**. Deployment environment topology patterns are specified when you create the deployment environment using either the **createDeploymentEnvDef** command or the Deployment Environment Configuration wizard.

```
wsadmin -connType SOAP -host myDmgr -port 8879 -user dmgrAdmin -password dmgrPass
> $AdminTask addNodeToDeploymentEnvDef {-topologyName myDepEnv
-topologyRole Messaging -nodeName MyNode}
```

Note: If you disable administrative security, you do not need to provide a user ID and password.

Generating deployment environments using the command line:

You can generate deployment environments using the **wsadmin** interface. This capability allows you to configure multiple deployment environments unattended on a deployment manager using a script.

You must enter the commands on the deployment manager on which you are configuring deployment environments.

Required security role for this task: When security and role-based authorization are enabled, you must log in to the administrative console as an administrator or configurator to perform this task.

After you have imported or created deployment environments on a deployment manager, you can configure the deployment environments using the **generateDeploymentEnv** command.

1. Enter the **wsadmin** environment.
2. Enter the **generateDeploymentEnv** command for each topology you are configuring.

The following command configures the eastEnvironment topology on host myDmgr.

```
wsadmin -connType SOAP -host myDmgr -port 8879
> $AdminTask generateDeploymentEnv {-topologyName eastTopology}
> $AdminConfig save
```

Note: If administrative security is enabled, you are prompted for a user ID and password after the system processes the **wsadmin** command.

Save the configured deployment environments. From the command line, enter **$AdminConfig save**.

Validating the deployment environment definition from the command line:

You can validate the deployment environment definition using the **wsadmin** command.

The task assumes that the node has been federated to the deployment manager.

You must be on the deployment manager where you are validating the deployment environment definition.

Required security role for this task: When security and role-based authorization are enabled, you must use a userid and password with administrator or operator authority to perform this task.

This task validates the deployment environment definition and uses the **wsadmin** command.

1. Open a command window.

   The **wsadmin** command can be found in either the *install_root*/profiles/*dmgr profile*/bin directory, or the *install_root*/bin directory.

2. At the command prompt, enter the **wsadmin** command to enter the **wsadmin** environment.

3. Enter the **validateDeploymentEnvDef** command to validate the deployment environment definition.

   Note: If administrative security is on, you will be prompted for a user ID and password, if you do not supply it in the command.

This example validates the deployment environment definition (**myDepEnv**) with administrative security enabled:

```
wsadmin -connType SOAP -host myDmgr -port 8879 -user dmgrAdmin -password -dmgrPass
> $AdminTask validateDeploymentEnvDef { -topologyName topOne}
```

Note: If you disable administrative security, you do not need to provide a user ID and password.

Displaying deployment environment status using the command line:

You can display the current status of a deployment environment using the **wsadmin** command.

The admin client must connect to the deployment manager for which you are displaying the status.

Required security role for this task: When security and role-based authorization are enabled, you must use a userid and password with administrator or operator authority to perform this task.

This task displays the current status of a deployment environment and uses the **wsadmin** command.

1. Open a command window. .

   The **wsadmin** command can be found in either the *install_root*/profiles/*dmgr profile*/bin directory, or the *install_root*/bin directory.

2. At the command prompt, enter the **wsadmin** command to enter the command environment.

   Note: Make sure **wsadmin** connects to the correct deployment manager, when running in connected mode.

3. Use the **showDeploymentEnvStatus** command to show the current status of the deployment environment.

   Note: If administrative security is on, you will be prompted for a user ID and password, if you do not supply it in the command.
   The following table lists the results that might be returned.

   Note: Some of the states listed in the table are valid for configured topologies only. The states that are apply to configured topologies only are noted as such.

Table 181. States of a topology instance in order of least to most available

State	Description
Incomplete	The deployment environment is not missing any elements but is incomplete in some way.
	Incomplete state may mean the deployment environment is missing a required role, node, comp or dependencies .
	The warning message contains additional details.
Complete	This state is also known as *Not configured* and it means that the configuration is known and complete but has not yet been generated.

Table 181. States of a topology instance in order of least to most available (continued)

State	Description
Configured	This means the configuration is in synch.
Partially configured	The deployment environment has been generated but deferred configuration has not been completed.
Unknown	The system cannot determine the current state of the deployment environment. A resync operation could be performed on this state.
Stopped	State applies to configured topologies only.All deployment targets in the topology are stopped.
Running	State applies to configured topologies only.The deployment environment is available and all functions are running.
Partially started	State applies to configured topologies only.The deployment environment is available but at least one function is partially running.
Starting	State applies to configured topologies only.The deployment environment is starting.
Partially stopped	State applies to configured topologies only.The deployment environment is available but at least one function is stopped or partially stopped.
Stopping	State applies to configured topologies only.The deployment environment is stopping
Unavailable	State applies to configured topologies only.The deployment environment state is unavailable.

This example displays the status of a deployment environment (**MyDepEnv**) on the host (**myDmgr**) with administrative security enabled.

Note: If you are running the admin client from the deployment manager bin folder, you do not need to include the **-host** and **-port** parameters in the command.

```
wsadmin –connType SOAP –host myDmgr –port 8879 –user dmgradmin –password dmgrpass
> $AdminTask showDeploymentEnvStatus {-topologyName myDepEnv}
```

The **-connType** parameter specifies the type of connection to be used; the default argument is **SOAP**.

Note: As the default is **SOAP**, you do not need to give explicitly if SOAP is the connection type that is being used.

The **-host** parameter specifies the host used for the SOAP or RMI connection. The default value for **-host** is the local host.

Note: If the node is running on the local host, you do not need to specify **-host**.

Note: If you disable administrative security, you do not need to provide a user ID and password.

Completing the database configuration

Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

Related tasks:

"Configuring Business Process Choreographer Explorer" on page 483
You can either run a script or use the administrative console to configure Business Process Choreographer Explorer.

Creating the Process Server or Process Center database tables:

Run the SQL scripts to create the database tables for your IBM Process Server or IBM Process Center configuration.

You have performed all of the steps required for your configuration and have selected not to run the database scripts to initialize the databases during the configuration. You have also created the database in which you want to create the Process Server or Process Center database tables. For information about creating the database, see *Creating databases*.

The procedure in this task describes how to run the Process Server or Process Center SQL scripts that were produced when you completed your configuration.

To run the Process Center or Process Server SQL scripts that were produced when you completed your configuration follow the steps below:

Note: The Process Server does not support schema. You must login as the user and then execute the SQL file.

1. Go to the directory that holds the SQL scripts for creating the database tables.

   By default, SQL scripts are output to *install_root/profile*/dbscripts/ProcessServer/*DB_product* at profile creation time. For example,

   `C:\install_root\profiles\Proc01\dbscripts\ProcessServer\DB2`

2. Connect to your database. For example, run **db2 connect to** *databaseName*.

3. Create the tables for Process Server or Process Center.

   From the directory navigated to in step 1, run **createTable_ProcessServer.sql** on the database you configured for the Process Server or Process Center (BPMDB).

   Make sure all SQL statements succeed without any errors.

4. Create the table procedures for Process Server or Process Center.

   From the directory navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server or Process Center (BPMDB).

   Make sure all SQL statements succeed without any errors.

   If you are using DB2 Universal, DB2 Universal for z/OS, or Microsoft SQL Server, use "GO" as a delimiting character when executing the stored procedure. For example, **db2 -tdGO -vf createProcedure_ProcessServer.sql**.

You have created the database tables for your Process Server or Process Center configuration and have completed the database configuration.

You can now load the database with system information and start the servers or clusters on your Process Server or Process Center configuration.

Related tasks:

"Creating databases" on page 356
If you did not create databases while creating profiles, you can use the SQL scripts to create them.

Creating the Performance Data Warehouse database tables:

Run the SQL scripts to create the database tables for your IBM Performance Data Warehouse.

You have performed all of the steps required for your configuration and have selected not to run the database scripts to initialize the databases during the configuration. You have also created the database in which you want to create the Performance Data Warehouse database tables. For information about creating the database, see *Creating databases*.

The procedure in this task describes how to run the Performance Data Warehouse SQL scripts that were produced when you completed your configuration.

To run the Performance Data Warehouse SQL scripts that were produced when you completed your configuration follow the steps below:

Note: The Performance Data Warehouse does not support schema. You must login as the user and then execute the SQL file.

1. Go to the directory that holds the SQL scripts for creating the database tables.

   By default, SQL scripts are output to *install_root*/*profile*/dbscripts/PerformanceDW/*DB_product* at profile creation time. For example,

   `C:\`*install_root*`\profiles\Proc01\dbscripts\PerformanceDW\DB2`

2. Connect to your database. For example, run **db2 connect to** *databaseName*.

3. Create the tables for the Performance Data Warehouse.

   From the directory navigated to in step 1, run **createTable_PerformanceDW.sql** on the database you configured for the Performance Data Warehouse (PDWDB).

   Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

You can now load the database with system information and start the servers or clusters on your Performance Data Warehouse.

Loading the database with system information

The profile creation process collects all database parameters related to the profile that you are creating and writes this configuration data to an XML file. You must run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

This command retrieves the database information from the `98database.xml` file to make a connection to the database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/`config` directory, to make the corrections. Database passwords must be encrypted. For more information, see "Encrypting passwords" on page 584.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the database. This data is required for the BPM applications to run correctly.

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation.

- If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.
- In a network deployment (ND) environment, you must run this command after a server or cluster of servers is created. **For a cluster, you need to run the command only once**, specifying a single cluster member. Run this command after the database and its tables have been created, after the profile and deployment environment have been created, and before the first server is started. You do not need to rerun the command if you add another cluster member.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone or deployment manager profile directory. For example:

```
C:/<install_root>/profiles/ProcCtr01/bin
<install_root>\profiles\Dmgr01\bin
```

Run the bootstrap utility using the following syntax:

- `Linux` `UNIX` **bootstrapProcessServerData.sh -profilePath** *profile_path* **-dbType** *db_type* **-dbJDBCClasspath** *classpath* [**-nodeName** *node_name* **-serverName** *server_name*]
- `Windows` **bootstrapProcessServerData.bat -profilePath** *profile_path* **-dbType** *db_type* **-dbJDBCClasspath** *classpath* [**-nodeName** *node_name* **-serverName** *server_name*]

where:

- **-profilePath** is the location where the profile was created. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-dbType** is the database type, such as DB2_UNIVERSAL ORACLE, or MSSQLSERVER_MICROSOFT. See Supported database types for the appropriate value. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-nodeName** is the name of the node. This parameter is required with **-serverName** for an ND environment. Do not specify for stand-alone.
- **-serverName** is the name of the server. This parameter is required with **-nodeName** for an ND environment. Do not specify for stand-alone.
- **-clusterName** (for 7.5.0.1 and later only) is the name of the application target cluster. For an ND environment, you can specify this parameter instead of the **-nodeName** and **-serverName** parameters.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center.

Important: For SQL Server, if the bootstrap utility fails, check that when you created the Process Server and Performance Data Warehouse databases, the **COLLATE** attribute indicated case insensitive (**CI**), not case sensitive (**CS**). That is, the create command should look like this:

```
CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS
```

Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name 'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

Bootstrap data onto a server that is part of an ND environment:

```
bootstrapProcessServerData -profilePath c:/BPM/profiles/Dmgr01
            -dbType DB2_UNIVERSAL -dbJDBCClasspath c:/BPM/db2/java
            -nodeName node01 -serverName server1
```

Bootstrap data onto a stand-alone profile server:

```
  bootstrapProcessServerData -profilePath "c:/Program Files/IBM/BPM/
    profiles/AppSrv01" -dbType DB2_UNIVERSAL -dbJDBCClasspath "C:/Program Files/BPM/db2/java"
```

You can start the stand-alone server or first cluster member.

Configuring components

You can configure individual components for IBM Business Process Manager.

Components can be configured in one of three ways:

1. Some IBM Business Process Manager components can be configured at profile creation time. This is particularly the case for a stand-alone server, for which most of the components may be configured at profile creation time.
2. For a network deployment cell, components may be configured by building and generating a Deployment Environment. By setting up a Deployment Environment, you build server clusters and configure the IBM Business Process Manager components on them.

   Note: Deployment Environments are not available for a stand-alone server.
3. The IBM Business Process Manager servers and clusters (and the components that run on them) can be configured individually, using either the administrative console or administrative scripts.

This information in this section describes how to configure individual components for IBM Business Process Manager.

Configuring a Process Server

You can use the administrative console to configure an application server or cluster as a Process Server. By configuring a server or cluster as a Process Server, you enable the server or cluster to support process applications and their associated services.

This task describes how to use the administrative console to configure a server or cluster as a Process Server.

For information about configuring a server or cluster as a Process Server using wsadmin scripting, including parameter definitions and examples, see the configureProcessServer command in the Reference documentation.

Note:

If you are using a stand-alone server profile, or have previously configured Process Server support for the server or cluster, you can review your current configuration but cannot change it in the administrative console.

1. Launch the administrative console
2. From the administrative console, select a path for configuring a server or a cluster.

   To configure a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Process Server**.

   To configure a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* > **Process Server**
3. Set the parameters to configure the server or cluster as a Process Server.

   For a description of all parameters, go to the panel and select **Page help** or, see Process Server in *Administrative console help* section of the Reference documentation.
4. Save the configuration.

You have configured the server or cluster as a Process Server.

Configure any other Business Process Manager components and products that are part of your installation.

Typically, when configuring Business Process Manager components using the administrative console, the sequence of configuration tasks to perform after you have configured Process Server, would be as follows:

1. Configure Performance Data Warehouse
2. Configure SCA
3. Configure Business Process Choreographer
4. Configure Business Space
5. Configure Common Event Infrastructure

A `TeamWorksConfiguration.running.xml` file is generated from several local configuration XML files when each server starts. This file is located at `BPM_ROOT\profiles\profile_name\config\cells\cellName\nodes\nodeName\servers\serverName\process-center\TeamWorksConfiguration.running.xml`.

Check the contents of `TeamWorksConfiguration.running.xml`. You might need to edit the configuration files that are used to generate the `TeamWorksConfiguration.running.xml` file.

If changes are required for the URL, IP addresses, and ports, then update the `99Local.xml` and the `100Custom.xml` configuration files and restart the server(s). You must update these files when you add a web server to your cluster because information from these files are used for generating application URLs. Make sure that you make identical changes for these files on all affected nodes, the `99Local.xml` and `100Custom.xml` files are local to the systems on which they reside. They are not replicated automatically between nodes. For more information about updating the xml files, see the Changing server properties and Customizing the Process Server/Process Center cluster to work with a web server topics.

Configuring a Process Center

You can use the administrative console to configure an application server or cluster as a Process Center. By configuring a server or cluster as a Process Center, you enable the server or cluster to support a shared development environment where Process Designer and Integration Designer can share assets such as process applications and their associated services.

This task describes how to use the administrative console to configure a server or cluster as a Process Center.

For information about configuring a server or cluster as a Process Center using wsadmin scripting, including parameter definitions and examples, see the configureProcessCenter command in the Reference documentation.

Note:

If you are using a stand-alone server profile, or have previously configured Process Center support for the server or cluster, you can review your current configuration but cannot change it in the administrative console.

1. Launch the administrative console
2. From the administrative console, select a path for configuring a server or a cluster.

   To configure a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Process Center**.

   To configure a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* > **Process Center**
3. Set the parameters to configure the server or cluster as a Process Center.

   For a description of all parameters, go to the panel and select **Page help** or, see Process Center in *Administrative console help* section of the Reference documentation.
4. Save the configuration.

You have configured the server or cluster as a Process Center.

Configure any other Business Process Manager components and products that are part of your installation.

Typically, when configuring Business Process Manager components using the administrative console, the sequence of configuration tasks to perform after you have configured Process Center, would be as follows:

1. Configure Performance Data Warehouse
2. Configure SCA
3. Configure Business Process Choreographer
4. Configure Business Space
5. Configure Common Event Infrastructure

A `TeamWorksConfiguration.running.xml` file is generated from several local configuration XML files when each server starts. This file is located at `BPM_ROOT`\profiles\`profile_name`\config\cells\`cellName`\nodes\ `nodeName`\servers\`serverName`\process-center\TeamWorksConfiguration.running.xml.

Check the contents of `TeamWorksConfiguration.running.xml`. You might need to edit the configuration files that are used to generate the `TeamWorksConfiguration.running.xml` file.

If changes are required for the URL, IP addresses, and ports, then update the `99Local.xml` and the `100Custom.xml` configuration files and restart the server(s). You must update these files when you add a web server to your cluster because information from these files are used for generating application URLs. Make sure that you make identical changes for these files on all affected nodes, the `99Local.xml` and `100Custom.xml` files are local to the systems on which they reside. They are not replicated automatically between nodes. For more information about updating the xml files, see the Changing server properties and Customizing the Process Server/Process Center cluster to work with a web server topics.

Configuring the Business Performance Data Warehouse component on a server or cluster

You can use the administrative console to configure the Business Performance Data Warehouse component on a server or cluster.

Before you configure the Performance Data Warehouse component on a server or cluster, you must first configure the corresponding Process Server or Process Center. In a network deployment environment the two components may be on the same server or cluster or split across multiple servers or clusters.

This task describes how to use the administrative console to configure the Performance Data Warehouse component on a server or cluster.

For information about configuring the Performance Data Warehouse component on a server or cluster using wsadmin scripting, including parameter definitions and examples, see the configurePerfDW command in the Reference documentation.

Note:

If you are using a stand-alone server profile, or have previously configured Performance Data Warehouse support for the server or cluster, you can review your current configuration but cannot change it in the administrative console.

1. Launch the administrative console
2. From the administrative console, select a path for configuring a server or a cluster.

   To configure a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Performance Data Warehouse Server**.

   To configure a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* > **Performance Data Warehouse Server**

3. Set the parameters to configure the Performance Data Warehouse component on a server or cluster.

   For a description of all parameters, go to the panel and select **Page help** or, see Performance Data Warehouse in *Administrative console help* section of the Reference documentation.

4. Save the configuration

You have configured the Performance Data Warehouse component on a server or cluster.

Configure any other Business Process Manager components and products that are part of your installation.

Typically, when configuring Business Process Manager components using the administrative console, the sequence of configuration tasks to perform after you have configured Process Server, would be as follows:

1. Configure Performance Data Warehouse
2. Configure SCA
3. Configure Business Process Choreographer
4. Configure Business Space
5. Configure Common Event Infrastructure

Configuring SCA support for a server or cluster

Use the Service Component Architecture (SCA) console page to enable a server or cluster in a network deployment environment to host service applications, their required messaging engines and destinations, or both.

Before configuring SCA support, determine the following:

- Whether you are using a stand-alone server profile. If so, SCA support is already configured and you cannot use the Service Component Architecture page to remove that support; however, you can use this page to modify some properties for database data sources.
- Where to host the messaging engines and destinations (use either a local or remote bus member).
- Whether you need to configure the SCA system bus only, or whether you also need to configure the SCA application bus. The application bus is configured by default and is required if you plan to deploy SCA applications that use WebSphere Business Integration Adapters.

Security role required for this task: You must be logged in as administrator or configurator to perform the following task.

Service applications require the use of one or more of the automatically created service integration buses, which must have configured messaging engines for destinations. By default, new servers and clusters in a network deployment configuration are not configured to host SCA applications and their destinations.

To configure SCA support on your server or cluster, perform the following steps.

1. From within the administrative console, click one of the following, depending on your scope:
   - **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Service Component Architecture**
   - **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* > **Service Component Architecture**
2. Click **Support the Service Component Architecture components**.
3. In the Bus Member Location panel, specify where you want to host the destinations and messaging engines required by the SCA applications. There are two options:
   - **Local**. Specifies that you plan to host SCA applications, destinations, and messaging engines on the current server or cluster.

- **Remote**. Specifies that you plan to host SCA applications on the current server or cluster while hosting destinations and messaging engines on a remote server or cluster (also referred to as a *deployment target*).

4. **(Remote bus member only)** If you selected **Remote** in the previous step, specify the remote server or cluster you want to use to host application destinations and messaging engines. Use the drop-down menu to select an existing deployment target (one that is already configured as a member of the SCA system bus), or click **New** to select a new server or cluster from the Browse Deployment Target page.

   If you select a new server or cluster from the Browse Deployment Target page, the necessary messaging is automatically configured on that target when you complete the SCA configuration documented in this topic.

5. Use the table in the System Bus Member panel to verify or modify the system bus data source configuration.
   a. Verify any default values in the **Database name**, **Schema**, **Create Tables**, **User name Password**, **Server**, and **Provider** fields. See the online help for detailed information about these fields and the values they accept.
   b. If no default values exist in these fields, or if the default values are incorrect, enter the appropriate values for the system bus data source. You can enter values directly in the field or by clicking **Edit** and making edits on the Data Source details page.
   c. Optional: Ensure that the data source can contact and authenticate with the database by clicking **Test Connection**.

6. Use the table in the Application Bus Member panel to verify or modify the application bus data source configuration.
   a. Ensure the **Enable the WebSphere Business Integration Adapter components** option is selected.

      Note: If you do not want to use the application bus, clear the **Enable the WebSphere Business Integration Adapter components** option and proceed to Step 7.
   b. Verify any default values in the **Database name**, **Schema**, **Create Tables**, **User name Password**, **Server**, and **Provider** fields. See the online help for detailed information about these fields and the values they accept.
   c. If no default values exist in these fields, or if the default values are incorrect, enter the appropriate values for the application bus data source. You can enter values directly in the field or by clicking **Edit** and making edits on the Data Source details page.

7. Click **OK** to complete the SCA configuration.

8. Save your changes. You can also optionally review the changes you have made.

Considerations for Service Component Architecture (SCA) support in servers and clusters:

Servers and clusters can support Service Component Architecture (SCA) applications, application destinations, or both.

SCA applications (also called service applications) require the use of one or more of the automatically created service integration buses. Each application uses a set of messaging resources, which are called *destinations*. These destinations require configured messaging engines, and they can be hosted on the same server or cluster as the application or on a remote server or cluster. Messaging engines typically use database data sources; note that a file store can be used in place of a database data source in a stand-alone server profile if that option was selected during profile creation.

By default, new servers and clusters in a network deployment or managed node environment are not configured to host SCA applications and their destinations.

Note: A stand-alone server has SCA support automatically configured. You cannot disable this configuration.

To enable this support, use the Service Component Architecture page in the administrative console. For servers, ensure that the application class-loader policy is set to `Multiple`.

Before enabling SCA support for a server or cluster in a network deployment or managed node environment, determine which of the following possible configurations you want to implement:

- **Remote bus member configuration**: The server or cluster hosts SCA applications, but the destinations are hosted on a remote server or cluster. This scenario requires the remote service integration bus members to be configured with the messaging engines needed to host the destination.

  While the use of remote messaging requires initial investment in planning for and configuring the service integration bus and its members, that configuration can be reused by multiple members within the application cluster. Messages are distributed to every member. In addition, the initial configuration can be structured to provide failover support.

- **Local bus member configuration**: The server or cluster hosts both SCA applications and application destinations. The required messaging engines are configured using the local bus members on the server or cluster.

Refer to the planning topics to help you decide which configuration is appropriate for your environment.

Related information:

Configuring class loaders of a server

Learning about service integration buses

Messaging engines

Configuring Business Space

You can configure Business Space powered by WebSphere, which provides a common interface for application users to create, manage, and integrate web interfaces across the IBM Business Process Management portfolio, WebSphere Enterprise Service Bus, and other IBM products.

Configuring Business Process Choreographer

You must configure Business Process Choreographer on a server or cluster before you deploy any enterprise applications that contain BPEL processes or human tasks.

For archiving purposes, you can configure a Business Process Archive Manager on servers or clusters that do not have a Business Process Choreographer configuration.

It is important that you have completed "Planning to configure Business Process Choreographer" on page 71.

For each server or cluster where you want to configure Business Process Choreographer, and depending on the configuration path that you have chosen, perform one of the following.

- For either of the following non-production configuration paths:
  - "Basic sample"
  - "Sample with organization"

  Perform "Using the Installer or Profile Management Tool to configure Business Process Choreographer" on page 425.

- For the "Production deployment environment" configuration path, perform "Using the administrative console's deployment environment wizard to configure Business Process Choreographer" on page 426.

- For the "Flexible custom configuration" configuration path, perform the actions described for the configuration tool that you want to use:
  - "Using the administrative console's Business Process Choreographer configuration page" on page 430.
  - "Using the bpeconfig.jacl script to configure Business Process Choreographer" on page 434.

- For the "Business Process Archive" configuration path, perform "Using the bpeconfig.jacl script to configure Business Process Archive Manager" on page 461.

Business Process Choreographer is configured.
- To create more Business Process Choreographer configurations on other servers or clusters, repeat this task.
- If you have not configured the Common Event Infrastructure yet, perform Configuring CEI event services.

Using the Installer or Profile Management Tool to configure Business Process Choreographer:

There are several ways to create a non-production Business Process Choreographer configuration.

You have completed "Planning to create a basic sample Business Process Choreographer configuration" on page 86 and you have decided which flavor of non-production system you want, as summarized in Table 38 on page 83.

1. If you are not going to use the Installer to install DB2 Express, you must create a suitable database for the common (CMNDB) database manually. For non-production configurations, the common database is used for the Business Process Choreographer tables. Keep the following in mind:
   - The database must be created with a page size of at least 8k. For example, the **CREATE DATABASE** statement could include the option **PAGESIZE 8 K;**
   - Normally, the tables required by Business Process Choreographer are created when the server is started and it finds that the tables do not exist. If you want to create the tables manually in the common database, do so before starting the server. Also use the hardcoded schema name BPEDB, otherwise the corresponding datasource **jdbc/BPEDB** will not be able to connect to the database.
2. To create the "Basic sample" configuration using the Profile Management Tool.
   a. Start the Profile Management Tool.
   b. Either create a new profile, or where applicable, augment an existing stand-alone profile.
   c. Select one of the following:
      - **IBM Business Process Manager Advanced: Process Center**
      - **IBM BPM Advanced, Process Center stand-alone profile**
      - **IBM Business Process Manager Advanced: Process Server**
      - **IBM BPM Advanced, Process Server stand-alone profile**
      -
   d. If are using DB2, you can select either **Typical profile creation** or **Advanced profile creation**.
   e. If are not using DB2, select **Advanced profile creation**.
3. If you want to create the "Basic sample" configuration using the Installer.
   a. Using the process server DVD or an image of it, start the launchpad.
   b. Select **Typical install**.
   c. If you have not already installed DB2, select the option to install DB2 express.
   d. Select **Stand-alone development IBM Business Process Manager Advanced - Process Server (qbpmaps)**.
4. If you want to create the "Sample with organization" configuration.
   a. Using the process server DVD or an image of it, start the launchpad.
   b. Select **Custom install**.
   c. Install DB2 Express.
   d. Select **Stand-alone development IBM Business Process Manager Advanced - Process Server (qbpmaps)**.
5. Optional: Perform "Verifying that Business Process Choreographer works" on page 528.

6. Optional: If you want to change the JMS authentication user IDs, the run-as user IDs, or the mappings of roles onto users and groups, using the administrative console, click **Security** > **Business Integration security** to change the security settings.

7. Optional: Update your virtual host configuration. By default, the web modules of the Business Process Choreographer applications are configured for the **default_host** virtual host. Make sure that the ports associated with the host alias are correct. You might need to add host aliases for the host names and ports of additional cluster members or for the Web server that is used. For more details about virtual hosts, refer to Virtual hosts.

8. Optional: Use the administrative console to change settings for the Human Task Manager:
   - If you want to change any of the Human Task Manager settings for the escalation e-mails, such as the sender address or the URL prefix for the Business Process Choreographer Explorer, click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, and make your changes.
   - If you want to change the e-mail server address, port number, the user ID, or password for the e-mail server, click **Resources** > **Mail** > **Mail sessions**, select **Cell** scope, then click **HTM mail session_*suffix***, where *suffix* is either `node_name_server_name` or `cluster_name`, depending on where Business Process Choreographer is configured. Make your changes.

9. Depending on the type of people directory provider that you use for people assignment, you might need to configure it:
   - The system and user registry people directory providers can be used without configuring them.
   - If you are using Lightweight Directory Access Protocol (LDAP), perform "Configuring the LDAP people directory provider" on page 474.
   - If you are using the Virtual Member Manager (VMM), perform "Configuring the Virtual Member Manager people directory provider" on page 473.

10. Optional: If you configured VMM, and you want to use people substitution, perform "Configuring people substitution" on page 479.

11. Optional: If you want to use group work items, use the administrative console to enable them. Click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, then select **Enable group work items**.

12. Optional: If you want to configure a remote Business Process Choreographer client that uses the Process Server client, perform, "Configuring a remote client application" on page 524.

Business Process Choreographer is configured.

   Typical install: IBM Business Process Manager Advanced: Process Server
   Custom install: IBM Business Process Manager Advanced: Process Server

Using the administrative console's deployment environment wizard to configure Business Process Choreographer:

Using the administrative console's deployment environment wizard, you can create a pattern-based configuration that includes Business Process Choreographer. If the Business Process Choreographer configuration has its own database, the configuration can be suitable for a production system.

You have performed "Planning to use the administrative console's deployment environment wizard" on page 87.

1. Start the deployment environment wizard. In the administrative console click **Servers** > **Deployment Environments** > **New**. As you enter other configuration parameters, make sure that you enter the values that you planned in "Planning to use the administrative console's deployment environment wizard" on page 87:

a. You can base the Business Process Choreographer configuration on any of the following patterns:
    - Single Cluster
    - Remote Messaging
    - Remote Messaging, Remote Support, and Web
    - Remote Messaging and Remote Support
b. On the security page, you can set the user name and password that will be used as the authentication alias for Business Process Choreographer, which is identified as component WBI_BPC.
c. On System REST Service Endpoints page, you can specify the host name and port for your REST endpoints, for example for a web server that hosts the web modules. Use this page to configure service endpoints for Representational State Transfer (REST) system interfaces. If you leave the host and port fields empty, the values default to those of a cluster member host and its HTTP port. For a load-balanced environment, you will have to change the default values to the virtual host name and port of your environment.
d. On the database page, if you want to use separate databases for Business Process Choreographer, the Business Process Choreographer Explorer, or the Business Process Choreographer messaging engine, change the default data sources from the default values to the values that you planned.
e. On the Business Process Choreographer page, specify the context roots, security parameters, and mail session parameters that you planned for this configuration.

2. If you specified a separate database for Business Process Choreographer, perform "Using a generated SQL script to create the database schema for Business Process Choreographer" on page 470. Otherwise, if you did not specify a separate database, make sure that the empty database exists so that Business Process Choreographer can create the default schema in the database the first time that it accesses the database.

3. If you specified a separate database for Business Process Choreographer Explorer reporting function, perform "Preparing the reporting database" on page 488. Otherwise, make sure that the empty database exists so that Business Process Choreographer can create the default schema in the database the first time that it accesses the database.

4. If you specified a separate database for Business Process Choreographer messaging engine, make sure that the database exists.
    - If you want to use the **Create tables** option to have the messaging engine create the default schema the first time that it uses the database, grant the database user ID the rights to create tables and views in the schema that you planned to use.
    - Otherwise, if you will **not** use the **Create tables** option, create the tables before the default messaging provider tries to access the database. You can use the sibDDLGenerator utility that is in the **bin** subdirectory of your *install_root* directory to generate a DDL file that can be used to create the tables.

5. For each node where you want to configure Business Process Choreographer, make sure that the environment variables for the JDBC drivers are set. On a cluster, you must perform this for every node that hosts a cluster member.
    a. Click **Environment** > **WebSphere variables**, for **Scope**, select the node where Business Process Choreographer will be configured.
    b. Select the environment variable for your JDBC provider:
        - For DB2 on Linux, UNIX, Windows, or z/OS, using the Universal driver, select DB2UNIVERSAL_JDBC_DRIVER_PATH.
        - For DB2 - IBM DataServer, select DB2_JCC_DRIVER_PATH.
        - For Microsoft SQL Server using the DataDirect ConnectJDBC type-4 driver, select CONNECTJDBC_JDBC_DRIVER_PATH.
        - For Microsoft SQL Server using the Microsoft SQL Server JDBC Driver, select MICROSOFT_JDBC_DRIVER_PATH.
        - For Oracle, select ORACLE_JDBC_DRIVER_PATH.

c. Set the environment variable to point to the location of the JDBC driver's JAR file, or files.

6. Activate Business Process Choreographer: Perform "Activating Business Process Choreographer" on page 528.

7. Optional: Verify that the basic Business Process Choreographer configuration works: Perform "Verifying that Business Process Choreographer works" on page 528.

8. Optional: Use the administrative console to change settings for the Human Task Manager:

   • If you want to change any of the Human Task Manager settings for the escalation e-mails, such as the sender address or the URL prefix for the Business Process Choreographer Explorer, click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, and make your changes.

   • If you want to change the e-mail server address, port number, the user ID, or password for the e-mail server, click **Resources** > **Mail** > **Mail sessions**, select **Cell** scope, then click **HTM mail session_***suffix*, where *suffix* is either *node_name_server_name* or *cluster_name*, depending on where Business Process Choreographer is configured. Make your changes.

9. If you configured Business Process Choreographer in a network deployment environment:

   a. If you will use the Business Process Choreographer Explorer, Business Process Archive Manager, the Business Space, or a client that uses the Representational State Transfer (REST) API, you must change the default context roots for the REST API so that they are unique for each combination of host name and port. To set the context roots perform the following:

      1) To set the context roots for the Business Flow Manager, click **Applications** > **Application Types** > **WebSphere enterprise applications** then *application_suffix* > **Context Root for Web Modules**, where *application* is **BPEContainer** for a Business Process Choreographer configuration or **BPArchiveMgr** for a Business Process Archive Manager configuration, and *suffix* is either *node_name_server_name* or the *cluster_name* where Business Process Choreographer or Business Process Archive Manager is configured. Then make sure that the context roots for the following Web modules and are correct and unique.

         • BFMIF_*scope*Web
         • BFMJAXWSAPI
         • BFMRESTAPI

      2) To set the context roots for the Human Task Manager, click **Applications** > **Application Types** > **WebSphere enterprise applications** then *application_suffix* > **Context Root for Web Modules**, where *application* is **TaskContainer** for a Business Process Choreographer configuration or **TaskArchiveMgr** for a Business Process Archive Manager configuration, and *suffix* is either *node_name_server_name* or the *cluster_name* where Business Process Choreographer is configured. Then make sure that the context roots for the following Web modules and are correct and unique.

         • HTMIF_*scope*Web
         • HTMJAXWSAPI
         • HTMRESTAPI

   b. If you changed any of the context roots for the Business Flow Manager or Human Task Manager you must also modify the corresponding endpoints:

      1) If you use the Business Process Choreographer Explorer or Business Process Archive Explorer: Change the REST endpoint to match the new context roots by clicking either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Business Process Choreographer Explorer**, select the **BPCExplorer_***scope* or **BPCArchiveExplorer_***scope* instance that you want to modify, and set the new value. For example, if the context root for the Business Flow Manager REST API is /rest/bpm/bfm then the full URL might be something like http://system7.mycompany.com:9080/rest/bpm/bfm.

Note: If you mapped the modules to an HTTP server, proxy server, IP sprayer, load balancer, or similar server, the URL should be based on the hostname and port number for that server.

2) If you use the Business Space: Change the REST endpoints to match the new context roots by clicking either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and either **Business Flow Manager** or **Human Task Manager**, then under **Additional Properties** click **REST Service Endpoint**, and set the new value.

Note: If you mapped the modules to an HTTP server, proxy server, IP sprayer, load balancer, or similar server, the URL should be based on the hostname and port number for that server.

10. Optional: Update your virtual host configuration. By default, the web modules of the Business Process Choreographer applications are configured for the **default_host** virtual host. Make sure that the ports associated with the host alias are correct. You might need to add host aliases for the host names and ports of additional cluster members or for the Web server that is used. For more details about virtual hosts, refer to Virtual hosts.

11. Depending on the type of people directory provider that you use for people assignment, you might need to configure it:
    - The system and user registry people directory providers can be used without configuring them.
    - If you are using Lightweight Directory Access Protocol (LDAP), perform "Configuring the LDAP people directory provider" on page 474.
    - If you are using the Virtual Member Manager (VMM), perform "Configuring the Virtual Member Manager people directory provider" on page 473.

12. Optional: If you configured VMM, and you want to use people substitution, perform "Configuring people substitution" on page 479.

13. Optional: If you want to use group work items, use the administrative console to enable them. Click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, then select **Enable group work items**.

14. Optional: If you want to configure a remote Business Process Choreographer client that uses the Process Server client, perform, "Configuring a remote client application" on page 524.

15. If you have WebSphere application security enabled and you have a long-running process that calls a remote EJB method, make sure that your Common Secure Interoperability Version 2 (CSIv2) inbound authentication configuration has CSIv2 identity assertion enabled. For more information about this, refer to Configuring Common Secure Interoperability Version 2 inbound communications.

16. Optional: If you require high security, change the default user IDs and passwords for the XA recovery authentication alias that were created for you. An additional XA recovery alias is created for both of the Business Process Choreographer data sources.
    a. In the administrative console, click **Security** > **Global security** then in the **Authentication** section, expand **Java Authentication and Authorization Service** , click **J2C authentication data**.
    b. Locate the new XA recovery aliases, which are based on the name of the standard alias with the postfix "_XAR" appended. For example, **BPCDB_Test.AppTarget_Auth_Alias_XAR** and **BPCME_01_Auth_Alias_XAR**.
    c. By default, the user ID and password for the XA recovery alias are the same ones used for the Business Process Choreographer database user. If that is not acceptable for your security requirements, change the XA recovery alias user IDs and passwords. The database identity for the XA recovery authentication alias on a data source must have authorization to do XA recovery. Depending on the authorization schema for your installation, this level of authorization might be different from the level of authorization that the identity needs to access database tables for an application.

Business Process Choreographer is configured for the deployment environment that you selected.

Using the administrative console's Business Process Choreographer configuration page:

Describes how to use the administrative console's Business Process Choreographer configuration page to create a configuration on a given server or cluster.

You must configure the necessary resources and configure Business Process Choreographer before you can run applications that contain BPEL processes or human tasks.

1. If you selected the Business Process Choreographer sample configuration option when you created a default profile, the Business Flow Manager, Human Task Manager, Business Process Choreographer Explorer, and Business Process Choreographer Explorer reporting function are already configured.

   You can check if they are configured, by looking in the administrative console for enterprise applications with names that start with:

   - BPCECollector
   - BPCExplorer
   - BPEContainer
   - HTM_PredefinedTasksMsg
   - HTM_PredefinedTasks
   - TaskContainer

   The sample configuration is not suitable for a production system. Because you can only have one Business Process Choreographer or Business Process Choreographer Archive Manager configuration on a deployment target, you must remove the sample configuration, as described in Removing the Business Process Choreographer configuration before you can create a new configuration.

2. If you have a network deployment environment, use the administrative console to make sure that the Service Component Architecture (SCA) is configured:

   a. If you want to configure Business Process Choreographer on a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then in the **Business Integration** section, click **Service Component Architecture**.

   b. If you want to configure Business Process Choreographer on a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name*, then in the **Business Integration** section, click **Service Component Architecture**.

   c. If it is not enabled, select **Support the Service Component Architecture components**, fill in all the configuration settings as appropriate, then click **Apply** and **Save**.

3. Create the Business Process Choreographer BPEDB database:

   - If you want to use the **Create tables** option on the Business Process Choreographer configuration page, to have Business Process Choreographer create the default schema the first time that it uses the database, perform the following:

     a. If the database does not already exist, create an empty database using the database tool of your choice.

     b. Grant the database user ID the rights to create tables and views in the schema that you planned to use.

   - Otherwise, if you will **not** use the **Create tables** option, create the tables before the default messaging provider tries to access the database. You can use the SQL scripts that are generated by the administrative console wizard to create the tables, as described in "Using a generated SQL script to create the database schema for Business Process Choreographer" on page 470.

4. Create the database for the data store for the Business Process Choreographer messaging engine:

   - If you want to use the **Create tables** option on the Business Process Choreographer configuration page, to have the messaging engine create the default schema the first time that it uses the database (the next time that the messaging engine is started), perform the following:

a. If the database does not already exist, create an empty database using the database tool of your choice.

   b. Grant the database user ID the rights to create tables and views in the schema that you planned to use.

   - Otherwise, if you will **not** use the **Create tables** option, create the tables before the default messaging provider tries to access the database. You can use the sibDDLGenerator utility that is in the **bin** subdirectory of your *install_root* directory to generate a DDL file that can be used to create the tables.

5. For each node where you want to configure Business Process Choreographer, make sure that the environment variables for the JDBC drivers are set. On a cluster, you must perform this for every node that hosts a cluster member.

   a. Click **Environment** > **WebSphere variables**, for **Scope**, select the node where Business Process Choreographer will be configured.

   b. Select the environment variable for your JDBC provider:
      - For DB2 on Linux, UNIX, Windows, or z/OS, using the Universal driver, select DB2UNIVERSAL_JDBC_DRIVER_PATH.
      - For DB2 - IBM DataServer, select DB2_JCC_DRIVER_PATH.
      - For Microsoft SQL Server using the DataDirect ConnectJDBC type-4 driver, select CONNECTJDBC_JDBC_DRIVER_PATH.
      - For Microsoft SQL Server using the Microsoft SQL Server JDBC Driver, select MICROSOFT_JDBC_DRIVER_PATH.
      - For Oracle, select ORACLE_JDBC_DRIVER_PATH.

   c. Set the environment variable to point to the location of the JDBC driver's JAR file, or files.

6. In the administrative console, select the server or cluster where you want to configure Business Process Choreographer. Click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*.

7. Go to the Business Process Choreographer configuration page: In the **Business Integration** section, expand **Business Process Choreographer** and click **Business Process Choreographer Containers**.

8. Verify that Business Process Choreographer is not configured. There should be a message indicating whether the Business Flow Manager is already installed.

   If the Business Flow Manager and Human Task Manager are already installed, perform Removing the Business Process Choreographer configuration before continuing with the next step.

9. Enter the values and select the options that you planned for the Business Process Choreographer configuration on this server or cluster.

10. Click **Apply**. Information is displayed reporting the progress deploying and configuring Business Process Choreographer.

11. If the installation succeeded, click **Save Changes**. Otherwise, discard the changes, check the administrative console and the SystemOut.log file on the Deployment Manager or server for any error messages that can help you correct the problem, then try again.

12. To create the database schema, you or your database administrator should perform the actions described in "Using a generated SQL script to create the database schema for Business Process Choreographer" on page 470 before you activate Business Process Choreographer in step 13.

    Note: If you do not perform the actions described in "Using a generated SQL script to create the database schema for Business Process Choreographer" on page 470, but your database will exist by the time you activate Business Process Choreographer in step 13, selecting the **Create tables** option means that the default schema will be created the first time that Business Process Choreographer accesses the database.

13. Activate Business Process Choreographer: Perform "Activating Business Process Choreographer" on page 528.

14. Optional: Verify that the basic Business Process Choreographer configuration works: Perform "Verifying that Business Process Choreographer works" on page 528.

15. Optional: Use the administrative console to change settings for the Human Task Manager:
    - If you want to change any of the Human Task Manager settings for the escalation e-mails, such as the sender address or the URL prefix for the Business Process Choreographer Explorer, click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, and make your changes.
    - If you want to change the e-mail server address, port number, the user ID, or password for the e-mail server, click **Resources** > **Mail** > **Mail sessions**, select **Cell** scope, then click **HTM mail session_***suffix*, where *suffix* is either *node_name_server_name* or *cluster_name*, depending on where Business Process Choreographer is configured. Make your changes.

16. Depending on the type of people directory provider that you use for people assignment, you might need to configure it:
    - The system and user registry people directory providers can be used without configuring them.
    - If you are using Lightweight Directory Access Protocol (LDAP), perform "Configuring the LDAP people directory provider" on page 474.
    - If you are using the Virtual Member Manager (VMM), perform "Configuring the Virtual Member Manager people directory provider" on page 473.

17. Optional: If you configured VMM, and you want to use people substitution, perform "Configuring people substitution" on page 479.

18. Optional: If you want to use group work items, use the administrative console to enable them. Click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, then select **Enable group work items**.

19. If you have WebSphere application security enabled and you have a long-running process that calls a remote EJB method, make sure that your Common Secure Interoperability Version 2 (CSIv2) inbound authentication configuration has CSIv2 identity assertion enabled. For more information about this, refer to Configuring Common Secure Interoperability Version 2 inbound communications.

20. Optional: If you require high security, change the default user IDs and passwords for the XA recovery authentication alias that were created for you. An additional XA recovery alias is created for both of the Business Process Choreographer data sources.
    a. In the administrative console, click **Security** > **Global security** then in the **Authentication** section, expand **Java Authentication and Authorization Service** , click **J2C authentication data**.
    b. Locate the new XA recovery aliases, which are based on the name of the standard alias with the postfix "_XAR" appended. For example, **BPCDB_Test.AppTarget_Auth_Alias_XAR** and **BPCME_01_Auth_Alias_XAR**.
    c. By default, the user ID and password for the XA recovery alias are the same ones used for the Business Process Choreographer database user. If that is not acceptable for your security requirements, change the XA recovery alias user IDs and passwords. The database identity for the XA recovery authentication alias on a data source must have authorization to do XA recovery. Depending on the authorization schema for your installation, this level of authorization might be different from the level of authorization that the identity needs to access database tables for an application.

21. If you configured Business Process Choreographer in a network deployment environment:
    a. If you will use the Business Process Choreographer Explorer, Business Process Archive Manager, the Business Space, or a client that uses the Representational State Transfer (REST) API, you must change the default context roots for the REST API so that they are unique for each combination of host name and port. To set the context roots perform the following:

1) To set the context roots for the Business Flow Manager, click **Applications > Application Types > WebSphere enterprise applications** then *application_suffix* > **Context Root for Web Modules**, where *application* is **BPEContainer** for a Business Process Choreographer configuration or **BPArchiveMgr** for a Business Process Archive Manager configuration, and *suffix* is either *node_name_server_name* or the *cluster_name* where Business Process Choreographer or Business Process Archive Manager is configured. Then make sure that the context roots for the following Web modules and are correct and unique.

   - BFMIF_*scope*Web
   - BFMJAXWSAPI
   - BFMRESTAPI

2) To set the context roots for the Human Task Manager, click **Applications > Application Types > WebSphere enterprise applications** then *application_suffix* > **Context Root for Web Modules**, where *application* is **TaskContainer** for a Business Process Choreographer configuration or **TaskArchiveMgr** for a Business Process Archive Manager configuration, and *suffix* is either *node_name_server_name* or the *cluster_name* where Business Process Choreographer is configured. Then make sure that the context roots for the following Web modules and are correct and unique.

   - HTMIF_*scope*Web
   - HTMJAXWSAPI
   - HTMRESTAPI

b. If you changed any of the context roots for the Business Flow Manager or Human Task Manager you must also modify the corresponding endpoints:

1) If you use the Business Process Choreographer Explorer or Business Process Archive Explorer: Change the REST endpoint to match the new context roots by clicking either **Servers > Clusters > WebSphere application server clusters** > *cluster_name* or **Servers > Server Types > WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Business Process Choreographer Explorer**, select the **BPCExplorer_*scope*** or **BPCArchiveExplorer_*scope*** instance that you want to modify, and set the new value. For example, if the context root for the Business Flow Manager REST API is /rest/bpm/bfm then the full URL might be something like http://system7.mycompany.com:9080/rest/bpm/bfm.

   Note: If you mapped the modules to an HTTP server, proxy server, IP sprayer, load balancer, or similar server, the URL should be based on the hostname and port number for that server.

2) If you use the Business Space: Change the REST endpoints to match the new context roots by clicking either **Servers > Clusters > WebSphere application server clusters** > *cluster_name* or **Servers > Server Types > WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and either **Business Flow Manager** or **Human Task Manager**, then under **Additional Properties** click **REST Service Endpoint**, and set the new value.

   Note: If you mapped the modules to an HTTP server, proxy server, IP sprayer, load balancer, or similar server, the URL should be based on the hostname and port number for that server.

22. Optional: If you have not yet installed and configured Business Process Choreographer Explorer, you can configure it now. Perform "Configuring Business Process Choreographer Explorer" on page 483.

23. Optional: Update your virtual host configuration. By default, the web modules of the Business Process Choreographer applications are configured for the **default_host** virtual host. Make sure that the ports associated with the host alias are correct. You might need to add host aliases for the host names and ports of additional cluster members or for the Web server that is used. For more details about virtual hosts, refer to Virtual hosts.

24. Optional: If you want to configure a remote Business Process Choreographer client that uses the Process Server client, perform, "Configuring a remote client application" on page 524.

Business Process Choreographer is configured.

Using the bpeconfig.jacl script to configure Business Process Choreographer:

Describes how to use the **bpeconfig.jacl** script to configure Business Process Choreographer and all the necessary resources on a given server or cluster.

You can also use this script to configure a Business Process Archive Manager configuration, that case is described in "Using the bpeconfig.jacl script to configure Business Process Archive Manager" on page 461.

Know what else you want to configure on the deployment target. The script can also optionally configure the following other Business Process Choreographer applications on the same deployment target.
- Business Process Explorer
- A local event collector

The script uses the database parameters to generate and optionally run an SQL file, which creates the necessary database objects.

1. Make sure that you know which options and parameters you are going to use. Refer to the values you planned in "Planning to configure Business Process Choreographer" on page 71. If you run the script in batch mode, you must include all required parameters. If you run the script interactively, any required parameters that are not provided on the command line are prompted for. For detailed information about the script, examples, its options and parameters, see "bpeconfig.jacl script file" on page 442.

Table 182. Planning bpeconfig.jacl parameters for a Business Process Choreographer configuration

Condition	Planning action
If the server (or in a network deployment environment, the deployment manager) is not running:	Include the wsadmin option: `-conntype NONE` Do not use this option if the server (or deployment manager) is running.
If the server (or deployment manager) is running and administrative security is enabled:	Include the following wsadmin parameters for a user ID that is authorized to run **wsadmin**: `-user userName` `-password userPassword`
If you are not using the default profile:	Include the wsadmin parameter: `-profileName profileName`
If you want to run the script interactively and be prompted for all mandatory and optional parameters:	Invoke the script and only specify any necessary wsadmin parameters (listed above in this table), but none of the script parameters listed below in this table. By specifying no script parameters, **-promptMode** defaults to **ASK**.
If you want to run the script interactively and be prompted for all mandatory and optional parameters, but also specify some script parameters:	Specify any necessary wsadmin parameters and any script parameters, but also include the option: `-promptMode ASK` Any script parameters that you specify are also prompted for, and the values you provided are offered as defaults, which you can accept or change.

Table 182. Planning bpeconfig.jacl parameters for a Business Process Choreographer configuration (continued)

Condition	Planning action
If you want to run the script interactively and want any missing optional script parameters to take their default values without being prompted for:	Specify any necessary wsadmin parameters and all mandatory script parameters, but also include the option: `-promptMode USE_DEFAULT` If a mandatory parameter is missing the script switches to **-promptMode ASK** mode.
If you want any missing mandatory parameters to cause the script to fail, rather than prompting for them:	Include the option: `-promptMode FAIL_IF_MISSING` Use this option if the script is invoked without the possibility to get input from the console.
If you want to use a response file that specifies parameter values for the script:	Include the option: `-options responseFile` For more information, refer to the description of the **-options** parameter in "bpeconfig.jacl script file" on page 442.

If you are not creating the configuration on the default server:	Include either the parameter:
	
	`-cluster clusterName`
	
	or both parameters:
	
	`-node nodeName`
	`-server serverName`

To create a Business Process Choreographer configuration:	Either do not specify the **-operationMode** parameter, or specify **-operationMode RUNTIME**
If you want to create a Business Process Archive Manager:	You cannot create it on the same deployment target as a Business Process Choreographer configuration. It must be configured separately on another deployment target as described in "Using the bpeconfig.jacl script to configure Business Process Archive Manager" on page 461.

Because the script will configure the Business Flow Manager and Human Task Manager:	Include the parameters required for the Business Flow Manager and Human Task Manager:
	
	`-jmsBFMRunAsUser userID`
	`-jmsBFMRunAsPwd password`
	`-jmsHTMRunAsUser userID`
	`-jmsHTMRunAsPwd password`
	
	For the administrator and monitor parameter pairs ending in *Users* and *Groups* you must specify either one or both parameters.
	
	`{-adminUsers userList |`
	` -adminGroups groupList}`
	
	`{-monitorUsers userList |`
	` -monitorGroups groupList}`
	
	The administration job user ID and password are optional.
	
	`-adminJobUser userID`
	`-adminJobPwd password`

If you do not want to use the default context roots for the APIs:	Include the optional parameters for context roots:
	
	`-contextRootBFMREST contextRootBFMREST`
	`-contextRootBFMWS contextRootBFMWS`
	`-contextRootHTMREST contextRootHTMREST`
	`-contextRootHTMWS contextRootHTMWS`

Table 182. Planning bpeconfig.jacl parameters for a Business Process Choreographer configuration (continued)

Condition	Planning action

If you want to enable a simple mail transfer protocol (SMTP) server for sending escalation e-mails:	Include the parameter:
	
	`-mailServerName mailServerName`
	
	If the mail server requires authentication, also include the parameters:
	
	`-mailPwd mailPassword`
	`-mailUser mailUserID`

Because you can either have the script file create the database, or just have it generate the SQL script without running the scripts:	Include the option: `-createDB { yes	no }`  If you select yes, the bpeconfig.jacl script will generate and run an SQL file to create the database objects in the default table space, which is not suitable for a high-performance system. In this case also plan to stop the server and use the `-conntype NONE` option. If you select no, and the database does not already exist, then you or your database administrator must run the generated SQL script. For a high-performance system, specify no, because you will need to customize the SQL script before running it. Also specify no if you do not have the authority to create the database yourself, so that you can provide the SQL script to your database administrator to customize and run. You must also specify no if you are using a database which has restricted support. **Restriction:** The script cannot create the following types of databases: • DB2 for z/OS • Oracle • A remote Microsoft SQL Server If you select yes and you are running the script in connected mode, creating the database or schema can fail if it takes longer than the a default timeout of three minutes.
If you used the database design tool to create a database design file:	Include the parameter `-bpcdbDesign databaseDesignFile` The values specified in the database design file have precedence over any occurrences of the following parameters included on the command line: -dbJava, -dbName, -dbPwd, -dbSchema, -dbServerName, -dbServerPort, -dbTablespaceDir, -dbType, -dbUser, -driverType, and -driverVersion.

Table 182. Planning bpeconfig.jacl parameters for a Business Process Choreographer configuration (continued)

Condition	Planning action
If you did not use the database design tool to create a database design file:	Include the parameter: `-dbType` *databaseType* Also provide the parameters required for your database type: `-dbConnectionTarget` *DB2zOSSubSystem* `-dbHome` *databaseInstallPath* `-dbJava` *JDBCDriverPath* `-dbName` *databaseName* `-dbPwd` *databasePassword* `-dbSchema` *schemaQualifier* `-dbServerName` *databaseServerName* `-dbServerPort` *databaseServerPort* `-dbStorageGroup` *DB2zOSStorageGroup* `-dbTablespaceDir` *databaseTablespacePath* `-dbUser` *databaseUser* `-dbVersion` *version* `-driverType` *JDBCDriverType* `-driverVersion` JDBCDriverVersion When running the script in batch mode on a cluster, if your database requires the `-dbJava` parameter, specify the parameter for each node that hosts a cluster member in the following way: `-dbJava.`*nodeName* *JDBCDriverPath* `_on_`*nodeName* **Note:** If you are using one of the following databases, bpeconfig.jacl can also create the database instance: • A local DB2 for Linux, UNIX, or Windows
Because every Business Process Choreographer configuration uses a JMS provider:	Include the parameter: `-mqType { WPM	MQSeries }` **Note:** The WebSphere MQ option is deprecated.
If you use the `-mqType MQSeries` option:	Include the following parameters: `-createQM { yes	no }` `-mqClusterName` *mqClusterName* `-mqHome` *MQInstallationDirectory* `-mqPwd` *JMSProviderPassword* `-mqUser` *JMSProviderUserID* `-qmNameGet` *getQueueManagerName* `-qmNamePut` *putQueueManagerName*
If you use the `-mqType WPM` option, and SCA uses a database as its message store, specify the Business Process Choreographer message engine store settings:	Include the following parameters: `-medbUser` *meDatabaseUser* `-medbPwd` *meDatabasePassword* `-mqCreateTables { yes	no }` `-mqSchemaName` *mqSchemaName*
If you do not want to configure Business Process Choreographer Explorer on the same deployment target as the Business Process Choreographer configuration:	Include the option: `-createExplorer no` **Note:** You can run the clientconfig.jacl script later to create Business Process Choreographer Explorer configurations.

Table 182. Planning bpeconfig.jacl parameters for a Business Process Choreographer configuration (continued)

Condition	Planning action
If you want to configure Business Process Choreographer Explorer on the same deployment target as the Business Process Choreographer configuration:	Include any of these optional parameters: ``` -createExplorer yes -contextRootExplorer explorerContextRoot -explorerHost explorerURL -hostName explorerVirtualHostname -maxListEntries maximum -remoteCluster clusterName -remoteNode nodeName -remoteServer serverName -restAPIBFM restAPIURL* -restAPIHTM restAPIURL* ``` **Note:** * In a network deployment environment, **-restAPIBFM** and **-restAPIHTM** are required. **Restriction:** The option **-createEventCollector yes** is only supported when running the script in batch mode.
If you are configuring a Business Process Choreographer Explorer, but you do not want it to provide the reporting function:	Include the option: ``` -reportFunction no ```
If you are configuring a Business Process Choreographer Explorer, and you want it to provide the reporting function:	Include the options: ``` -reportAtSnapshotRange number -reportCreateTables { yes	no } -reportDataSource jndiName -reportFunction yes -reportSchemaName schemaName ``` Also specify whether you want an event collector on this deployment target: ``` -createEventCollector { yes	no } ``` For more information about these parameters, including default values, see "bpeconfig.jacl script file" on page 442.

2. If you selected the Business Process Choreographer sample configuration option when you created a default profile, the Business Flow Manager, Human Task Manager, Business Process Choreographer Explorer, and Business Process Choreographer Explorer reporting function are already configured.

   You can check if they are configured, by looking in the administrative console for enterprise applications with names that start with:

   - BPCECollector
   - BPCExplorer
   - BPEContainer
   - HTM_PredefinedTasksMsg
   - HTM_PredefinedTasks
   - TaskContainer

   The sample configuration is not suitable for a production system. Because you can only have one Business Process Choreographer or Business Process Choreographer Archive Manager configuration on a deployment target, you must remove the sample configuration, as described in Removing the Business Process Choreographer configuration before you can create a new configuration.

3. If you have a network deployment environment, use the administrative console to make sure that the Service Component Architecture (SCA) is configured:

a. If you want to configure Business Process Choreographer on a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then in the **Business Integration** section, click **Service Component Architecture**.

b. If you want to configure Business Process Choreographer on a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name*, then in the **Business Integration** section, click **Service Component Architecture**.

c. If it is not enabled, select **Support the Service Component Architecture components**, fill in all the configuration settings as appropriate, then click **Apply** and **Save**.

4. If you are using WebSphere Platform Messaging (WPM) as the JMS provider, then create the database for the data store for the Business Process Choreographer messaging engine:

   - If you want to use the `-mqCreateTables yes` option to have the messaging engine create the default schema the first time that it uses the database, perform the following:

     a. If the database does not already exist, create it.

     b. Grant the database user ID the rights to create tables and views in the schema that you planned to use.

   - Otherwise, if you will use the `-mqCreateTables no` option, create the tables before the default messaging provider tries to access the database. You can use the database design tool to generate a DDL file that can be used to create the tables.

5. If you plan to use the option `-createDB yes` to run the generated SQL scripts to create the database schema:

   a. If you are using one of the following databases:
      - DB2 for z/OS
      - Oracle
      - a remote Microsoft SQL Server

      and your database does not already exist, create an empty database manually according to the documentation for your database. For example, for Oracle, make sure that the schema name matches an Oracle user ID.

   b. Make sure that the database client, for example `db2.exe`, is on the path for the scripting client.

   c. Make sure that the application server is stopped.

6. Invoke the bpeconfig.jacl script file, either in batch mode providing the options and configuration parameters that you planned, or in interactive mode. For example:

   To configure Business Process Choreographer on a stand-alone server on a Windows platform, using a DB2 database, the batch mode command might be like the following:

```
wsadmin -conntype none -f bpeconfig.jacl
        -adminGroups bpcadmins
        -createDB no
        -createEventCollector no
        -dbJava d:\\programs\\IBM\\SQLLIB\\java
        -dbName BPEDB
        -dbSchema WPRBE00
        -dbServerName db2host.acme.com
        -dbTablespaceDir d:\\DB2\\tablespacedir
        -dbType DB2
        -dbUser db2user -dbPwd secret
        -driverType DataServer
        -explorerHost http://wpshost.acme.com:80/bpc
        -jmsBFMRunAsUser jmsuser -jmsBFMRunAsPwd secret
        -jmsHTMRunAsUser escalationuser -jmsHTMRunAsPwd secret
        -mailServerName smtphost.acme.com
        -mailUser {}
        -monitorGroups bpcmonitors
        -mqCreateTables yes
        -mqSchemaName WPRBM00
        -mqType WPM
```

```
-mqUser sibuser -mqPwd secret
-operationMode RUNTIME
-promptMode FAIL_IF_MISSING
-reportFunction no
-restAPIBFM http://wpshost.acme.com:80/rest/bpm/bfm
-restAPIHTM http://wpshost.acme.com:80/rest/bpm/htm
```

For other platforms, the file system paths would be different. For details about the script file, refer to "bpeconfig.jacl script file" on page 442.

7. If you either used the `-createDB no` option to defer that creation of the database, or if the bpeconfig.jacl script failed create the database, you or your database administrator should perform the actions described in "Using a generated SQL script to create the database schema for Business Process Choreographer" on page 470 before you activate Business Process Choreographer in step 10.

   Note: If your database is local, and it will exist by the time you activate Business Process Choreographer in step 10, and you do not perform the actions described in "Using a generated SQL script to create the database schema for Business Process Choreographer" on page 470, the default schema will be created the first time that Business Process Choreographer accesses the database.

8. If you used the **-reportFunction yes** option you must create the data source for the reporting function manually. Use the JNDI name that you specified with the **-reportDataSource** parameter.

9. If you are using the WebSphere MQ Java Message Service (JMS) provider, and you used the `-createQM no` option to prevent the script from creating the queue manager and queues, create the queue manager and queues now by performing "Creating the queue manager and queues for Business Process Choreographer" on page 457.

10. Activate Business Process Choreographer: Perform "Activating Business Process Choreographer" on page 528.

11. Optional: Verify that the basic Business Process Choreographer configuration works: Perform "Verifying that Business Process Choreographer works" on page 528.

12. Optional: If you want to change the JMS authentication user IDs, the run-as user IDs, or the mappings of roles onto users and groups, using the administrative console, click **Security** > **Business Integration security** to change the security settings.

13. Optional: Use the administrative console to change settings for the Human Task Manager:
    - If you want to change any of the Human Task Manager settings for the escalation e-mails, such as the sender address or the URL prefix for the Business Process Choreographer Explorer, click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, and make your changes.
    - If you want to change the e-mail server address, port number, the user ID, or password for the e-mail server, click **Resources** > **Mail** > **Mail sessions**, select **Cell** scope, then click **HTM mail session**_*suffix*, where *suffix* is either *node_name_server_name* or *cluster_name*, depending on where Business Process Choreographer is configured. Make your changes.

14. Depending on the type of people directory provider that you use for people assignment, you might need to configure it:
    - The system and user registry people directory providers can be used without configuring them.
    - If you are using Lightweight Directory Access Protocol (LDAP), perform "Configuring the LDAP people directory provider" on page 474.
    - If you are using the Virtual Member Manager (VMM), perform "Configuring the Virtual Member Manager people directory provider" on page 473.

15. Optional: If you configured VMM, and you want to use people substitution, perform "Configuring people substitution" on page 479.

16. Optional: If you want to use group work items, use the administrative console to enable them. Click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** >

Server Types > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, then select **Enable group work items**.

17. If you have WebSphere application security enabled and you have a long-running process that calls a remote EJB method, make sure that your Common Secure Interoperability Version 2 (CSIv2) inbound authentication configuration has CSIv2 identity assertion enabled. For more information about this, refer to Configuring Common Secure Interoperability Version 2 inbound communications.

18. Optional: If you require high security, change the default user IDs and passwords for the XA recovery authentication alias that were created for you. An additional XA recovery alias is created for both of the Business Process Choreographer data sources.

    a. In the administrative console, click **Security** > **Global security** then in the **Authentication** section, expand **Java Authentication and Authorization Service** , click **J2C authentication data**.

    b. Locate the new XA recovery aliases, which are based on the name of the standard alias with the postfix "_XAR" appended. For example, **BPCDB_Test.AppTarget_Auth_Alias_XAR** and **BPCME_01_Auth_Alias_XAR**.

    c. By default, the user ID and password for the XA recovery alias are the same ones used for the Business Process Choreographer database user. If that is not acceptable for your security requirements, change the XA recovery alias user IDs and passwords. The database identity for the XA recovery authentication alias on a data source must have authorization to do XA recovery. Depending on the authorization schema for your installation, this level of authorization might be different from the level of authorization that the identity needs to access database tables for an application.

19. Optional: If you have not yet installed and configured Business Process Choreographer Explorer, you can configure it now. Perform "Configuring Business Process Choreographer Explorer" on page 483.

20. If you configured Business Process Choreographer in a network deployment environment:

    a. If you will use the Business Process Choreographer Explorer, Business Process Archive Manager, the Business Space, or a client that uses the Representational State Transfer (REST) API, you must change the default context roots for the REST API so that they are unique for each combination of host name and port. To set the context roots perform the following:

        1) To set the context roots for the Business Flow Manager, click **Applications** > **Application Types** > **WebSphere enterprise applications** then *application_suffix* > **Context Root for Web Modules**, where *application* is **BPEContainer** for a Business Process Choreographer configuration or **BPArchiveMgr** for a Business Process Archive Manager configuration, and *suffix* is either *node_name_server_name* or the *cluster_name* where Business Process Choreographer or Business Process Archive Manager is configured. Then make sure that the context roots for the following Web modules and are correct and unique.

            - BFMIF_*scope*Web
            - BFMJAXWSAPI
            - BFMRESTAPI

        2) To set the context roots for the Human Task Manager, click **Applications** > **Application Types** > **WebSphere enterprise applications** then *application_suffix* > **Context Root for Web Modules**, where *application* is **TaskContainer** for a Business Process Choreographer configuration or **TaskArchiveMgr** for a Business Process Archive Manager configuration, and *suffix* is either *node_name_server_name* or the *cluster_name* where Business Process Choreographer is configured. Then make sure that the context roots for the following Web modules and are correct and unique.

            - HTMIF_*scope*Web
            - HTMJAXWSAPI
            - HTMRESTAPI

    b. If you changed any of the context roots for the Business Flow Manager or Human Task Manager you must also modify the corresponding endpoints:

1) If you use the Business Process Choreographer Explorer or Business Process Archive Explorer: Change the REST endpoint to match the new context roots by clicking either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Business Process Choreographer Explorer**, select the **BPCExplorer_*scope*** or **BPCArchiveExplorer_*scope*** instance that you want to modify, and set the new value. For example, if the context root for the Business Flow Manager REST API is `/rest/bpm/bfm` then the full URL might be something like `http://system7.mycompany.com:9080/rest/bpm/bfm`.

   Note: If you mapped the modules to an HTTP server, proxy server, IP sprayer, load balancer, or similar server, the URL should be based on the hostname and port number for that server.

2) If you use the Business Space: Change the REST endpoints to match the new context roots by clicking either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and either **Business Flow Manager** or **Human Task Manager**, then under **Additional Properties** click **REST Service Endpoint**, and set the new value.

   Note: If you mapped the modules to an HTTP server, proxy server, IP sprayer, load balancer, or similar server, the URL should be based on the hostname and port number for that server.

21. Optional: Update your virtual host configuration. By default, the web modules of the Business Process Choreographer applications are configured for the **default_host** virtual host. Make sure that the ports associated with the host alias are correct. You might need to add host aliases for the host names and ports of additional cluster members or for the Web server that is used. For more details about virtual hosts, refer to Virtual hosts.

22. Optional: If you want to configure a remote Business Process Choreographer client that uses the Process Server client, perform, "Configuring a remote client application" on page 524.

Business Process Choreographer is configured.

bpeconfig.jacl script file:

This script file configures Business Process Choreographer or Business Process Archive Manager and all the necessary resources on a server or cluster.

Purpose

This script can either be run interactively or in batch mode to configure Business Process Choreographer or Business Process Archive Manager. The script can create a local database and the necessary messaging resources. It can optionally configure a Business Process Choreographer Explorer or Business Process Archive Explorer, with or without the reporting function.

Location

The bpeconfig.jacl script file is located in the Business Process Choreographer **config** directory:

- `Linux`   `UNIX`   *install_root*/ProcessChoreographer/config
- `Windows`   *install_root*\ProcessChoreographer\config

Restrictions

This script has the following restrictions:

For a DB2 for z/OS database
The bpeconfig.jacl script cannot create a DB2 for z/OS database. You must create it manually.

For a DB2 database

The bpeconfig.jacl script cannot create a database if the Universal Driver type 4 is selected even if DB2 is installed locally.

For an Oracle database

The bpeconfig.jacl script cannot create an Oracle database. If you want to use an Oracle database for Business Process Choreographer, you must create the database manually.

For a Microsoft SQL Server database

The bpeconfig.jacl script cannot create a remote database. To create a local database, use a type-2 JDBC driver, and do not specify the -dbServerName parameter. If you want to use a remote Microsoft SQL Server database for Business Process Choreographer, you must create the database manually.

Running the script in a stand-alone server environment

The configuration script is run using the **wsadmin** command. In a stand-alone server environment:

- Include the **-conntype NONE** option only if the application server is not running.
- If WebSphere administrative security is enabled, and your user ID does not have configurator or administrator authority, include the wsadmin **-user** and **-password** options to specify a user ID that has configurator or administrator authority.
- If you are not working with the default profile, use the wsadmin **-profileName** *profile* option to specify the profile.

Running the script in a network deployment environment

The configuration script is run using the **wsadmin** command. In a network deployment environment:

- Run the script on the deployment manager node.
- Include the **-conntype NONE** option only if the deployment manager is not running.
- If WebSphere administrative security is enabled, and your user ID does not have configurator or administrator authority, include the wsadmin **-user** and **-password** options to specify a user ID that has configurator or administrator authority.
- If you are not working with the default profile, use the wsadmin **-profileName** *profile* option to specify the profile.

Configuring Business Process Choreographer with a Business Process Choreographer Explorer, and Business Process Choreographer Explorer reporting function non-interactively

If you provide the necessary parameters on the command line, you will not be prompted for them. To configure Business Process Choreographer, enter one of the following commands:

`Linux`   `UNIX`   If your current directory is *install_root*, enter the command:

```
bin/wsadmin.sh -f ProcessChoreographer/config/bpeconfig.jacl parameters
```

`Windows`   If your current directory is *install_root,* enter the command:

```
bin\wsadmin -f ProcessChoreographer/config/bpeconfig.jacl parameters
```

where *parameters* are as follows:

```
-adminGroups groupList
-adminUsers userList
-adminJobPwd password
-adminJobUser userID
-bpcdbDesign databaseDesignFile
-cluster clusterName
-conntype NONE
```

```
-contextRootBFMWS contextRootBFMWS
-contextRootBFMREST contextRootBFMREST
-contextRootExplorer explorerContextRoot
-contextRootHTMWS contextRootHTMWS
-contextRootHTMREST contextRootHTMREST
-createDB { yes | no }
-createEventCollector { yes | no }
-createExplorer { yes | no }
-createQM { yes | no }
-dbConnectionTarget DB2zOSSubSystem
-dbHome databaseInstallPath
-dbJava JDBCDriverPath
-dbName databaseName
-dbPwd databasePassword
-dbSchema schemaQualifier
-dbServerName databaseServerName
-dbServerPort databaseServerPort
-dbStorageGroup DB2zOSStorageGroup
-dbTablespaceDir databaseTableSpacePath
-dbType databaseType
-dbUser databaseUser
-dbVersion version
-driverType JDBCDriverType
-driverVersion JDBCDriverVersion
-explorerHost explorerURL
-hostName VirtualHostname
-jmsBFMRunAsPwd password
-jmsBFMRunAsUser userID
-jmsHTMRunAsPwd password
-jmsHTMRunAsUser userID
-mailPwd mailPassword
-mailServerName mailServerName
-mailUser mailUserID
-maxListEntries max
-medbPwd meDatabasePassword
-medbUser meDatabaseUser
-monitorGroups groupList
-monitorUsers userList
-mqClusterName mqClusterName
-mqCreateTables { yes | no }
-mqHome MQInstallationDirectory
-mqPwd JMSProviderPassword
-mqSchemaName mqSchemaName
-mqType JMSProviderType
-mqUser JMSProviderUserID
-node nodeName
-operationMode { RUNTIME | ARCHIVE }
-options responsefile
-precompileJSPs { yes | no }
-qmNameGet getQueueManagerName
-promptMode { ASK | USE_DEFAULT | FAIL_IF_MISSING }
-qmNamePut putQueueManagerName
-remoteCluster clusterName
-remoteNode nodeName
-remoteServer serverName
-reportAtSnapshotRange number
-reportCreateTables { yes | no }
-reportDataSource jndiName
-reportFunction { yes | no }
-reportSchemaName schemaName
-restAPIBFM restAPIURL
-restAPIHTM restAPIURL
-server serverName
```

Note: Some of these parameters are optional, depending on the values provided for other parameters.
The dependencies between parameters and the conditions that determine whether a parameter is optional

or required are described for each parameter in the following descriptions. Any required parameters that are not specified on the command line are prompted for interactively. If the same parameter is specified more than once, the last value specified is used.

Parameters

You can use the following parameters when invoking the script using `wsadmin`:

-adminGroups *groupList*
Where *groupList* is the list of names of groups, from the user registry, to which the Business Process Choreographer system administrator role maps to. The separator character is the vertical line (|). This property is needed to install the process container. This parameter has no default value. Either one or both of the adminUsers or adminGroups options must be set.

-adminUsers *userList*
Where *userList* is the list of names of users, from the user registry, to which the Business Process Choreographer system administrator role maps to. The separator character is the vertical line (|). This property is needed to install the process container. This parameter has no default value. Either one or both of the adminUsers or adminGroups options must be set.

-bpcdbDesign *databaseDesignFile*
If you used the database design tool to create a database design file, use this option to specify the database design file, *databaseDesignFile*.

The values specified in the database design file have precedence over any occurrences of the following parameters included on the command line: -dbJava, -dbName, -dbPwd, -dbSchema, -dbServerName, -dbServerPort, -dbTablespaceDir, -dbType, -dbUser, -driverType, and -driverVersion.

-adminJobPwd *password*
Where *password* is the password for the administration job user ID.

-adminJobUser *user ID*
This user ID is used to run administrative jobs such as the Business Flow Manager and Human Task Manager cleanup services and the process instance migration tool. If you will not use these services, you do not need to specify the user ID.This user ID is optional. If you specify this user ID, it must be a member of the Business Process Choreographer system administrator role.

-cluster *clusterName*
Where *clusterName* is the name of the cluster where Business Process Choreographer will be configured. This parameter is optional. Do not specify this option in a standalone server environment, nor if you specify the node and server.

-conntype NONE
This specifies that no administration connection is available. Only include this option if the application server (for stand-alone) or deployment manager (for network deployment) is not running. This is a `wsadmin` parameter, if you do not specify it, you will not be prompted for it.

-contextRootBFMREST *contextRootBFMREST*
Where *contextRootBFMREST* is the context root for the REST API endpoint URL. For the Business Flow Manager (BFM) the default context root on a server or a cluster is **/rest/bpm/bfm**.

-contextRootBFMWS *contextRootBFMWS*
Where *contextRootBFMWS* is the context root for the Web Service Endpoint URL. For a Business Flow Manager (BFM), on a server, the default context root is **/BFMIF_nodeName_serverName**. On a cluster, the default is **/BFMIF_clusterName**.

-contextRootExplorer *contextRootExplorer*
Where *contextRootExplorer* is the context root for the Business Process Choreographer Explorer. The default value is **/bpc**, which results in the default URL of **http://host:port/bpc**. The context root must be unique for each combination of host name and port.

-contextRootHTMREST *contextRootHTMREST*
Where *contextRootHTMREST* is the context root for the REST API endpoint URL. For the Human Task Manager (HTM) the default context root on a server or a cluster is **/rest/bpm/htm**.

-contextRootHTMWS *contextRootHTMWS*
Where *contextRootHTMWS* is the context root for the Web Service Endpoint URL. For a Human Task Manager (HTM), on a server, the default context root is **/HTMIF_*nodeName_serverName***. On a cluster, the default is **/HTMIF_*clusterName***.

-createDB { yes | no }
Possible values are **yes** or **no**. If set to **yes**, the script creates the database. For z/OS databases and Oracle, this script cannot create the database, it can only create the table spaces and tables. For other database types, the default value is **yes**. For production systems, use **no**. If you use **yes**, the command prompt from which bpeconfig.jacl is invoked must have the appropriate paths set to run the corresponding database commands, for example, db2.exe.

-createEventCollector { *yes | no*}
When run in batch mode, the default is yes, which causes the Business Process Choreographer event collector application to be configured, which is required by the Business Process Choreographer Explorer reporting function. When -createEventCollector has the value yes, you can use the -report* parameters to specify options for the Business Process Choreographer Explorer reporting function (previously known as the Business Process Choreographer Observer), for example, -reportDataSource to specify a separate reporting database rather than sharing the Business Process Choreographer BPEDB database. If you do not want the Business Process Choreographer event collector application to be installed, set the value of this parameter to no.

-createExplorer { yes | no }
This controls whether an explorer application is configured or not. If set to **no**, no explorer application will be configured. If this parameter is either set to **yes** or not specified, then the type of explorer created depends on the type of configuration you are creating, which is determined by the **-operationMode** parameter.
- If you are configuring Business Process Choreographer, then a Business Process Choreographer Explorer will be created.
- If you are configuring Business Process Archive Manager, then a Business Process Archive Explorer will be created.

-createEventCollector { *yes | no*}
This parameter is ignored if -operationMode ARCHIVE is specified. Otherwise, it controls whether an event collector is configured. When run in batch mode, the default is yes, which causes the Business Process Choreographer event collector application to be configured, which is required by the Business Process Choreographer Explorer reporting function. When -createEventCollector has the value yes, you can use the -report* parameters to specify options for the Business Process Choreographer Explorer reporting function (previously known as the Business Process Choreographer Observer), for example, -reportDataSource to specify a separate reporting database rather than sharing the Business Process Choreographer BPEDB database. If you do not want the Business Process Choreographer event collector application to be installed, set the value of this parameter to no.

-createQM { *yes | no*}
Controls whether the script creates a local WebSphere MQ queue manager. This option only has an effect if the parameter mqType has the value **MQSeries**, which is deprecated. The default value for this parameter is **yes**. Use the value **no** if you do not want the script to create the WebSphere MQ queue manager, for example, if you want to create the queue manager on a different server to the one where you are running the script.

-dbConnectionTarget *DB2zOSSubSystem*
Where *DB2zOSSubSystem* is the DB2 connection target location used to create the Business Process Choreographer database tables and the data source. This parameter is only required for DB2 on z/OS. The default value is **BPEDB**.

-dbHome *databaseInstallPath*
> Where *databaseInstallPath* is the installation directory of the database system. This parameter is optional for DB2 if the createDB parameter is set to **Yes**. For all other databases, this parameter is ignored. It is used to create the database or the database tables, and for creating the data source. The default value, and requirements depend on the database and on the platform:

> **For DB2:**
> - [Windows] The default is *current_drive***Program Files\IBM\SQLLIB** where *current_drive* is the current drive letter and *dbHome* is the installation database home directory.
> - [Solaris] The default is **/export/home/***dbUser***/sqllib**.
> - On other platforms, the default is **/home/***dbUser***/sqllib**.

> The directories *dbHome*/**bnd** and *dbHome*/**bin** must exist.

-dbJava *JDBCDriverPath*
> Where *JDBCDriverPath* is the directory where the JDBC driver is located. This parameter is only required for the following combinations of database and driver types:
> - For DB2 Universal with a type-4 driver, the default value is *databaseInstallPath*/**java**. Where *databaseInstallPath* is the installation directory for the database system.
> - For DB2 for z/OS, with a type-4 driver, the default value is *databaseInstallPath*/**java**. Where *databaseInstallPath* is the installation directory for the database system.
> - For Microsoft SQL Server data source, with either the **Microsoft** or the **DataDirect** driver type, there is no default value.
> - For Oracle, there is no default value.

> When running the script in batch mode to configure a cluster, if your database requires the **-dbJava** parameter, specify the parameter for each node that hosts a cluster member in the following way:
> ```
> -dbJava.nodeName JDBCDriverPath_on_nodeName
> ```

> Where *JDBCDriverPath* is the path to the JDBC driver and *nodeName* is the name of the node.

-dbName *databaseName*
> Where *databaseName* is the name of the Business Process Choreographer database. It is used to create the database or the database tables, and for creating the data source. The default value is **BPEDB**.
> - For Oracle, *databaseName* is the TNS.

-dbPwd *databasePassword*
> Where *databasePassword* is the password for the user ID *databaseUser*.

-dbSchema *schemaQualifier*
> *schemaQualifier* is the schema qualifier used to create the Business Process Choreographer database tables and the data source. The default value is empty, which means to use the implicit schema qualifier, which depends on the database type being used.

-dbServerName *databaseServerName*
> Where *databaseServerName* is the name server that hosts the database for Business Process Choreographer. It is used to create the data source.
> - For DB2, the default value is empty. For DB2 UDB, this parameter is optional, and if it is not specified, a type 2 JDBC driver is configured for DB2, otherwise a type 4 JDBC provider is configured.
> - For all other database types, the default value is the fully qualified host name of the local host.

-dbServerPort *databaseServerPort*
> Where *databaseServerPort* is the TCP/IP port for the database server for Business Process Choreographer. This parameter is required if dbServerName is specified.
> - For DB2, the default value is **50000**.
> - For Microsoft SQL Server, the default value is **1433**.

- For Oracle with the driver type thin, the default value is **1521**.

-dbStorageGroup *DB2zOSStorageGroup*
Where *DB2zOSStorageGroup* is the storage group used to create the Business Process Choreographer database tables. This parameter is only required for DB2 on z/OS. There is no default value, and the value specified must not be empty.

-dbTablespaceDir *databaseTableSpacePath*
Where *databaseTableSpacePath* is the directory where the database table spaces are created. It is used to create the database and database tables. This parameter is only required for the following database types:
- For Oracle, there is no default value. You must provide a value.
- For DB2, the default value is empty, which means that no table spaces are created.

-dbType *databaseType*
Where *databaseType* is the database type. This parameter is needed for installing the process container, for creating the database or database tables, and for creating the data source. There is no default value. Possible values are:
- DB2
- zOS-DB2
- MSSQL
- Oracle

-dbUser *databaseUser*
Where *databaseUser* is the user ID to access the database. It is used to create the data source. The default value depends on the database and platform:
- For DB2 on Windows platforms: "db2admin"
- For DB2 on other platforms: "db2inst1"
- For Oracle: "system"
- For Microsoft SQL Server: The user ID of the currently logged on user

-dbVersion *version*
This parameter is only required for Microsoft SQL Server. It has no default value.
- If the database has no Unicode support, specify either **2500** or **2800**.
- If the database has Unicode support, either **2500U** or **2800U**.

-driverType *JDBCDriverType*
Where *JDBCDriverType* is the type of JDBC driver. It is used to create the data source.
- For DB2 for Linux, UNIX, Windows, and z/OS platforms possible values are **Universal** or **DataServer**.
- For Oracle, only the **thin** driver type is supported.
- For Microsoft SQL Server, possible values are **Microsoft** or **DataDirect**.

-driverVersion *JDBCDriverVersion*
Where *JDBCDriverVersion* is the version of the JDBC driver that will be used to create the data source. For Microsoft SQL Server, possible values are **1.2**, **2.0** or **3.0**. This parameter is optional. In interactive mode (when **promptMode=ASK**) the default is **2.0**, otherwise the default is **1.2**. For other databases this parameter is ignored.

-explorerHost *explorerURL*
This parameter is ignored if -operationMode ARCHIVE is specified. Otherwise, *explorerURL* is the URL of the Business Process Choreographer Explorer. If this parameter is not specified for a non-cluster environment, a default value is computed, for example, http://localhost:9080. The value of this parameter is used by the Human Task Manager to link to this explorer instance.

-hostName *VirtualHostname*
Where *VirtualHostname* is the virtual host where the Business Process Choreographer Explorer, the

Web service bindings of the Business Flow Manager and Human Task Manager APIs, and the REST bindings of the Business Flow Manager and Human Task Manager APIs will run. The default value is **default_host**.

-jmsBFMRunAsPwd *password*

Where *password* is the password for the jmsBFMRunAsUser user ID. This property is required to configure the process container. This parameter has no default value. It must be set.

-jmsBFMRunAsUser *user ID*

Where *user ID* is the run-as user ID from the user registry for the Java EE role JMSAPIUser. This property is required to configure the process container. This parameter has no default value. It must be set.

-jmsHTMRunAsPwd *password*

Where *password* is the password for the jmsHTMRunAsUser user ID. This property is required to configure the human task container. This parameter has no default value. It must be set.

-jmsHTMRunAsUser *user ID*

Where *user ID* is the run-as user ID from the user registry for the Java EE role EscalationUser. This property is required to configure the human task container. This parameter has no default value. It must be set.

-mailPwd *mailPassword*

This parameter is ignored if -operationMode ARCHIVE is specified. The value *mailPassword* is the password for the user ID *mailUserID*. This parameter is only needed if the mail server requires authentication. Otherwise, it can be omitted. This parameter is needed to create the mail session for the Human Task Manager to send notification mails.

-mailServerName *mailServerName*

This parameter is ignored if -operationMode ARCHIVE is specified. The value *mailServerName* is the host name of the mail server to be used by the Human Task Manager to send notification mails. It is needed when configuring the mail session. If this parameter is set to an empty value, the mail session configuration will be skipped. The default value is the fully qualified host name of the local host.

-mailUser *mailUserID*

This parameter is ignored if -operationMode ARCHIVE is specified. Where *mailUserID* is the user ID to access the mail server. This parameter is only needed if the mail server requires authentication. Otherwise, it can be omitted. This parameter is needed to create the mail session for the Human Task Manager to send notification mails. The default value is empty, which is only appropriate if no authentication is required.

-maxListEntries *maximum*

Where *maximum* is the maximum number of results that the Business Process Choreographer Explorer or Business Process Archive Explorer will return for a query. The default is 10000.

-medbPwd *MEDBPassword*

Where *MEDBPassword* is the password for the user ID that is provided for the medbUser parameter. This parameter is ignored if -operationMode ARCHIVE is specified. This parameter has no default value.

-medbUser *MEDBUserID*

Where *MEDBUserID* is the user ID to access the messaging engine database. The default value for this parameter is the value of the dbUser parameter. This parameter is ignored if -operationMode ARCHIVE is specified.

-monitorGroups *groupList*

Where *groupList* is the list of names of groups, from the user registry, to which the Business Process Choreographer system monitor role will be mapped. The separator character is the vertical line (|). This property is needed to install the process container. This parameter has no default value. Either or both monitorUsers or monitorGroups must be set.

-monitorUsers *userList*
Where *userList* is the list of names of users, from the user registry, to which the Business Process Choreographer system monitor role will be mapped. The separator character is the vertical line (|). This property is needed to install the process container. This parameter has no default value. Either or both monitorUsers or monitorGroups must be set.

-mqClusterName *mqClusterName*
Where *mqClusterName* is the name of the WebSphere MQ cluster that the queue manager will join. This parameter is optional. The default value is `MQCluster`. This option only has an effect if the parameter mqType has the value **MQSeries**, which is deprecated.

-mqCreateTables { *yes* | *no*}
This parameter is ignored if -operationMode ARCHIVE is specified. This parameter only has an effect when the mqType option is set to **WPM**. This parameter controls whether the default JMS provider automatically creates its tables in the message engine database upon the first connection. The default is inherited from the SCA setting, you can use this parameter to override the default.

-mqHome *MQInstallationDirectory*
Where *MQInstallationDirectory* is the installation directory of WebSphere MQ. This parameter is used to create the queue manager and the queues (Windows platforms only) and for creating the listener ports and the queue connection factories. If the WebSphere variable MQ_INSTALL_ROOT is set, its value is used, and is not modified. This option only has an effect if the parameter mqType has the value **MQSeries**, which is deprecated.

If MQ_INSTALL_ROOT is not set, the default value used for *MQInstallationDirectory* depends on the platform:

- AIX `/usr/mqm`

- Linux Solaris `/opt/mqm`

- Windows *current_drive*`\Program Files\IBM\WebSphere MQ`

-mqPwd *JMSProviderPassword*
Where *JMSProviderPassword* is the password for the user ID provided for mqUser. This parameter is ignored if -operationMode ARCHIVE is specified. This parameter has no default value.

-mqSchemaName *mqSchemaName*
Where *mqSchemaName* is the name of the database schema for the default JMS provider's messaging engine. This parameter is ignored if -operationMode ARCHIVE is specified. Business Process Choreographer will use the same database as SCA, but uses a different schema. You can use this parameter to override the default schema name. The default value for Oracle databases is the user ID specified for *medbUser*, for other databases, the default is a generated value, for example **WPRBM00**.

-mqType *JMSProviderType*
Where *JMSProviderType* is the type of Java Message Service (JMS) provider to use for Business Process Choreographer. This parameter is used to create the queue manager and the queues, the listener ports or ActivationSpecs, and the queue connection factories.

Where *JMSProviderType* is one of the following values:

WPM   For default messaging (WebSphere Platform Messaging). This option is always available.

MQSeries
For WebSphere MQ. This option requires that the product WebSphere MQ is installed. Using this value is deprecated.

-mqUser *JMSProviderUserID*
Where *JMSProviderUserID* is the user ID to access the JMS provider.
- If mqType has the value **WPM**, this parameter is used to authenticate against the Business Process Choreographer Service Integration (SI) bus; the default value is the currently logged on user.

- If mqType has the value **MQSeries**, this parameter is used on Linux and UNIX platforms to create the queue manager and the queues. The default value for *JMSProviderUserID* is **mqm**.

-node *nodeName*
Where *nodeName* is the name of the node where Business Process Choreographer will be configured. If you have only one node and exactly one server, this parameter is optional.

-operationMode { RUNTIME | ARCHIVE }
This optional parameter controls whether a Business Process Choreographer configuration or a Business Process Archive Manager configuration is created on the deployment target. The default is **RUNTIME**, which will create a Business Process Choreographer configuration. If you specify **ARCHIVE**, a Business Process Archive Manager configuration will be created, however, the associated Business Process Choreographer configuration must already exist before you use the **ARCHIVE** option. This parameter also determines whether a Business Process Choreographer Explorer or a Business Process Archive Explorer instance is created.

-options *responsefile*
This optional parameter specifies a response file, *responsefile* from which settings are read. This parameter can be combined with other parameters, in which case, they are evaluated in the specified order, and any parameter that is specified more than once takes the last value specified for it. The file must use the Java properties format, for example:

```
operationMode=RUNTIME
dbName=BPEDB
bpcdbDesign=
dbJava=d\:\\IBM\\SQLLIB\\java
...
```

Special characters, like colon and backslash, must be escaped.

-promptMode {ASK|USE_DEFAULT|FAIL_IF_MISSING}
This parameter is optional. If you only specify wsadmin parameters the default is ASK. If you specify any parameters other than wsadmin parameters, the default is USE_DEFAULT.

ASK Use this option if you want to run the script interactively and be prompted for all mandatory and optional parameters.

USE_DEFAULT
Use this option if you want to run the script interactively, and want any missing optional parameters to take their default values, but missing mandatory parameters to be prompted for. If a mandatory parameter is missing the script switches to **-promptMode ASK** mode.

FAIL_IF_MISSING
Use this option if you want any missing mandatory parameters to cause the script to fail, rather than prompting for them. Use this option if the script is invoked without the possibility to get input from the console.

-precompileJSPs { no | yes }
Determines whether Java Server Pages (JSPs) will be precompiled, or not. The default is no. Note that it is not possible to debug precompiled JSPs.

-qmNameGet *getQueueManagerName*
Where *getQueueManagerName* is the name of the queue manager for GET requests. It is used to create the queue manager and the queues, and to create the listener ports and the queue connection factories. It must not contain the **-** character. The default value for *getQueueManagerName* is **BPC_*nodeName_serverName***. This option only has an effect if the parameter mqType has the value **MQSeries**, which is deprecated.

-qmNamePut *putQueueManagerName*
Where *putQueueManagerName* is the queue manager name for PUT requests. It is used only when the mqClusterName parameter has been set. It is used to create the queue manager and the queues, and to create the listener ports and the queue connection factories. It must not contain the **-** character, and

it must not be the same as the queue manager name specified for the qmNameGet parameter. The default value for *putQueueManagerName* is **BPCC_nodeName_serverName**.

-remoteCluster *clusterName*
Use this parameter, if you do not want to connect to the local Business Process Choreographer or Business Process Archive Manager configuration and you do not specify remoteNode and remoteServer. If this parameter is not specified, it defaults to the value of the -cluster parameter.

-remoteNode *nodeName*
Use this parameter and remoteServer if you do not want to connect to the local Business Process Choreographer or Business Process Archive Manager. If this parameter is not specified, it defaults to the value of the -node parameter.

-remoteServer *serverName*
Use this parameter and remoteNode if you do not want to connect to the local Business Process Choreographer or Business Process Archive Manager configuration. If this parameter is not specified, it defaults to the value of the -server parameter.

-reportAtSnapshotRange *number*
A snapshot report is built by evaluating all events that are older than the qualifying snapshot date and time. This optional parameter defines the number of days for which events can be included in a snapshot report. Only events that have been emitted within this period are evaluated by the snapshot report. The default is 60 days. This optional parameter only has an effect if the reporting function is enabled using the option **-reportFunction yes**.

If this value is too high, a very large number of events might have to be processed, and generating a report can take a long time. Try setting this value to the maximum duration of a process instance in your business environment.

-reportCreateTables { yes | no}
This optional parameter indicates if the Business Process Choreographer Explorer reporting function schema is created when Business Process Choreographer Explorer connects to the database the first time. The default is **yes**. This optional parameter only has an effect if the reporting function is enabled using the option **-reportFunction yes**.

-reportDataSource *jndiName*
Where *jndiName* is the JNDI name of the data source JNDI that is used to connect to the database. Mandatory parameter when **-reportFunction yes** is specified. The data source is not created automatically.

-reportFunction { yes | no }
This optional parameter controls whether the reporting function is enabled when a Business Process Choreographer Explorer or Business Process Archive Explorer is being configured. It has no effect when the **-createExplorer no** option is specified. In interactive mode, the default is no. In batch mode, for compatibility with earlier versions, the default is yes.

-reportSchemaName *schemaName*
This optional parameter identifies the database schema that is used as a prefix for all reporting database objects. If you specify no schema name, a unique schema name is generated. This optional parameter only has an effect if the reporting function is enabled using the option **-reportFunction yes**. The default value is WPRBC00.

-restAPIBFM *restAPIURL*
Where *restAPIURL*is the URL for the Business Flow Manager REST API, which is needed to support the graphical process widget for the Business Process Choreographer Explorer or Business Process Archive Explorer. On a standalone server, the default is computed, for example, **http://*localhost*:9080/ rest/bpm/bfm**. In a network deployment environment there is no default value.

-restAPIHTM *restAPIURL*
Where *restAPIURL* is the URL for the Human Task Manager REST API, which is needed to support the graphical process widget for the Business Process Choreographer Explorer or Business Process

Archive Explorer. On a standalone server, the default is computed, for example, **http://*localhost*:9080/ rest/bpm/htm**. In a network deployment environment there is no default value.

-server *serverName*
> Where *serverName* is the name of the server where Business Process Choreographer or Business Process Archive Manager will be configured. If you have only one node and exactly one server, this parameter is optional.

Example: Configuring a stand-alone server non-interactively

To configure Business Process Choreographer on a stand-alone server on a Windows platform, using a DB2 database, the batch mode command might be like the following:

```
wsadmin -conntype none -f bpeconfig.jacl
        -adminGroups bpcadmins
        -createDB no
        -createEventCollector no
        -dbJava d:\\programs\\IBM\\SQLLIB\\java
        -dbName BPEDB
        -dbSchema WPRBE00
        -dbServerName db2host.acme.com
        -dbTablespaceDir d:\\DB2\\tablespacedir
        -dbType DB2
        -dbUser db2user -dbPwd secret
        -driverType DataServer
        -explorerHost http://wpshost.acme.com:80/bpc
        -jmsBFMRunAsUser jmsuser -jmsBFMRunAsPwd secret
        -jmsHTMRunAsUser escalationuser -jmsHTMRunAsPwd secret
        -mailServerName smtphost.acme.com
        -mailUser {}
        -monitorGroups bpcmonitors
        -mqCreateTables yes
        -mqSchemaName WPRBM00
        -mqType WPM
        -mqUser sibuser -mqPwd secret
        -operationMode RUNTIME
        -promptMode FAIL_IF_MISSING
        -reportFunction no
        -restAPIBFM http://wpshost.acme.com:80/rest/bpm/bfm
        -restAPIHTM http://wpshost.acme.com:80/rest/bpm/htm
```

For other platforms, the file system paths would be different.

Example: Configuring on a cluster non-interactively

To configure Business Process Choreographer on a cluster "AppCluster", consisting of two nodes; a Windows node "Node01" and a UNIX node "Node02", using a DB2 database, the batch mode command might be like the following:

```
wsadmin -conntype none -profileName Dmgr01 -f bpeconfig.jacl
        -adminUsers bpcadmins
        -cluster cluster1
        -contextRootBFMREST /rest/bpm/bfm
        -contextRootBFMWS /BFMIF_AppCluster
        -contextRootExplorer /bpc
        -contextRootHTMWS /HTMIF_AppCluster
        -contextRootHTMREST /rest/bpm/htm
        -createEventCollector no
        -dbJava.acmeNode01 "c:\\Progam Files\\IBM\\SQLLIB\\java"
        -dbJava.acmeNode02 /home/db2inst1/sqllib
        -dbName BPEDB70
        -dbSchema WPRBE00
```

```
-dbType DB2
-dbUser db2user -dbPwd secret
-driverType Universal
-explorerHost http://wps.acme.com/bpc
-hostName default_host
-jmsBFMRunAsUser jmsuser -jmsBFMRunAsPwd secret
-jmsHTMRunAsUser escalationuser -jmsHTMRunAsPwd secret
-mailServerName smtphost.acme.com
-mailUser {}
-maxListEntries 5000
-medbUser db2user
-monitorUsers bpcmonitors
-mqCreateTables yes
-mqSchemaName WPRBM00
-mqType WPM
-mqUser sibuser -mqPwd secret
-reportFunction no
-restAPIBFM http://wps.acme.com/rest/bpm/bfm
-restAPIHTM http://wps.acme.com/rest/bpm/htm
```

For other platforms, the file system paths would be different.

Example: Configuring Business Process Choreographer interactively

This example, illustrates running the bpeconfig.jacl script to configure Business Process Choreographer using an existing DB2 database and a Business Process Choreographer Explorer. This example assumes that you are using the default profile and that either administrative security is not enabled, or that your user ID has operator or administrator authority.

Restriction: When run interactively, this script cannot configure the event collector application that is required by the Business Process Choreographer Explorer reporting function. You can either configure the event collector by running the script in batch mode, or by performing "Configuring the Business Process Choreographer event collector application" on page 513.

1. On the server, or for network deployment, on the deployment manager, enter the command to start the script:

   - `Linux` `UNIX`

     install_root/bin/wsadmin.sh -f *install_root*/ProcessChoreographer/config/bpeconfig.jacl

   - `Windows`

     install_root\bin\wsadmin.bat -f *install_root*\ProcessChoreographer\config\bpeconfig.jacl

2. Interactively enter responses to the questions that are displayed:

   a. In a network deployment environment, you will be offered a server, or cluster, to configure in. If it is not the correct server, or cluster, enter **No** to be offered the next server, or cluster. If it is the correct server, or cluster, enter **Yes**.

   b. In a network deployment environment, you will see the question **Will this Process Choreographer instance be used for normal operation or for archiving [RUNTIME/ARCHIVE]?**: To configure a Business Process Choreographer configuration, enter **RUNTIME**. The **ARCHIVE** option creates a Business Process Archive Manager configuration.

   c. For the question **User(s) to add to role Process Choreographer system administrator**, enter the user IDs for the users who will perform the role of business process administrator.

   d. For the question **Group(s) to add to role Process Choreographer system administrator**, enter the groups from the domain user registry that are mapped onto the role of business process administrator.

   e. For the question **User(s) to add to role Process Choreographer system monitor**, enter the user IDs for the users who will perform the role of business process monitor.

f. For the question **Group(s) to add to role Process Choreographer system monitor**, enter the groups from the domain user registry that are mapped onto the role of business process monitor.

g. For the question **Run-as UserId for role JMSAPIUser**, enter the run-as user ID that will be used for the JMSAPIUser role.

h. Enter the password for the run-as user ID.

i. For the question **Run-as UserId for administrative jobs (may be empty; if set, must be a Process Choreographer system administrator):**, you can enter the run-as user ID that will be used for administrative jobs such as cleanup service jobs and process instance migration. If you will not use these services, you can leave it empty. If you specify a user ID, it must be a member of the Process Choreographer system administrator role.

j. If you specified a user ID for administrative jobs, enter the password for the user ID.

k. For the question **Use WebSphere default messaging or WebSphere MQ (deprecated) [WPM/MQSeries]**, select the JMS provider that you want to use.

l. For the question **Virtual Host for the SCA Web Service [default_host]:** , press **Enter** to accept the default value **default_host** for the Service Component Architecture (SCA) Web server virtual host.

m. For the question **Context root for the SCA Web Service [/BFMIF_PNODE_server1]:**, press **Enter** to accept the default value **BFMIF_*nodeName_serverName***.

n. For the question **Context root for the REST API [/rest/bpm/bfm]:**, press **Enter** to accept the default value **/rest/bpm/bfm**.

o. For the question **Database design file (leave empty to get detail prompts) []**, press **Enter** to not specify a design file, and instead be prompted for the database information.

p. For the question **Run-as UserID for role EscalationUser**, enter the run-as user ID for the role of escalation user, for example **db2admin**.

q. Enter the password for the escalation user ID. This prompt will be hidden if you used the same user ID as for step 2g.

r. For the question **Context root for the SCA Web Service [/HTMIF_PNODE_server1]:**, press **Enter** to accept the default value **HTMIF_*nodeName_serverName***.

s. For the question **Context root for the REST API [/rest/bpm/htm]:**, press **Enter** to accept the default value **/rest/bpm/htm**.

t. For the question **Create the mail notification session for the human task manager?**, enter **No** if you do not want to create the mail notification session for the Human Task Manager. Otherwise, enter **Yes**, and specify the mail transport host. Optionally, you can specify the user ID and password.

u. If you get the question **User ID for access to Process Choreographer SI bus**, enter the user ID to use to access the default JMS provider.

v. Enter the password for the service integration bus authentication user ID.

w. For the question **Messaging engine database schema qualifier [WPRBM00]: WPRBM00**, press **Enter** to accept the default schema qualifier for the messaging engine database, or enter a different one.

x. For the question **Automatically create the database tables when the messaging engine connects for the first time [Yes/no]? yes**, press **Enter** to accept the default that the database tables for the messaging engine the first time that it connects to the database, or enter **no** if you will create them manually.

y. For the question **Create DataSource for a DB2, an Oracle, or an SQL Server database [DB2/zOS-DB2/Oracle/MSSQL]?**, for this example, enter **DB2**. Selecting a different database results in other database-specific questions.

z. Enter the database name.

aa. For the question **Use the Universal or the DataServer JDBC provider [Universal/DataServer]**, for this example, enter **Universal** to select the JDBC provider.

ab. For the question **DB2 User ID**, enter the user ID to access the database.

ac. Enter the password for the database user ID.

ad. For the question **Database server name (leave empty for the type 2 driver, set to use the type 4 driver)**, enter the name of the server that hosts the database.

ae. For the question **Database server port**, enter the database server port, for example, 50000.

af. At the **JDBC driver directory on [yourHost]** prompt, enter the directory where the DB2 JDBC driver JAR files are located.

ag. The following information is displayed **NOTE: Any following settings are needed to generate the database script for manual execution.**

ah. For the question **DB2 tablespace directory on database server (may be empty)** hit **Enter** to leave it empty.

ai. For the question **Is 'BPEDB' an existing database (the Process Choreographer schema must not yet exist)** enter **Yes** if the BPEDB database already exists, otherwise enter **No**.

aj. At the **Database schema name (may be empty)** prompt, hit **Enter** to use the implicit schema qualifier.

ak. For the question **Context root for the Business Process Choreographer Explorer [/bpc]:** , enter the context root for Business Process Choreographer Explorer or press **Enter** to use the default value **/bpc**.

al. For the question **Install the Business Process Choreographer Explorer?**, enter **Yes** to install Business Process Choreographer Explorer, then for the question **Precompile JSPs?**, enter **Yes** if you want Java Server Pages (JSPs) to be precompiled, otherwise enter **No**. For a remote Business Process Choreographer Explorer, for the question **Node of Process Choreographer to connect to [PNODE]:** enter the name of the Business Process Choreographer node to connect to, and for the question **Server of Process Choreographer to connect to [server1]:** enter the name of the Business Process Choreographer server to connect to or press **Enter** to accept the default.

am. For the question **Maximum number of list entries for the Process Choreographer Explorer**, press **Enter** to use the default value **10000**.

an. The following reminder is displayed:

```
******************************************************************************
* NOTE: The Process Choreographer REST API URLs are needed by the
* Process Choreographer Explorer's graphical process widget.
******************************************************************************
```

ao. For the question **URL for the Business Flow Manager REST API**, press **Enter** to use the default value **https://*host_name*:9080/rest/bpm/bfm**.

ap. For the question **URL for the Human Task Manager REST API**, press **Enter** to use the default value **https://*host_name*:9080/rest/bpm/htm**.

aq. For the question **Enable the reporting function (formerly known as 'Observer') [No/yes]?**, press **Enter** to accept the default that the Business Process Choreographer Explorer reporting function will not be enabled . Otherwise, enter **Yes** to enable it.

ar. Various information is displayed, for example providing the URL of the Business Process Choreographer Explorer. For example:

```
******************************************************************************
* NOTE: The Process Choreographer URL will be used by the
* Human Task Manager on server server1 of node PNODE
* to link to this Explorer instance. Set an empty URL to not create this link.
* To clear the default value, enter a space character.
******************************************************************************
URL for this Process Choreographer Explorer [http://host_name:9080/bpc]:
```

Enter the URL for this Business Process Choreographer Explorer instance, or press **Enter** to accept the default.

as. A reminder is displayed about where to find the script files that you can use to configure the Business Process Choreographer Explorer reporting function.

```
        To interactively configure the EventCollector,
        please use the script setupEventCollector located in
        install_root\ProcessChoreographer\config.
        Supply the same wsadmin parameters ('-conntype', '-profileName', ...) as for bpeconfig.jacl.
```

3. In case of problems, check the log files.

Troubleshooting

If the bpeconfig.jacl script file fails, first check the log files listed in the next section for anything that needs to be fixed. Then run the script again using the same command line parameters. The script will recognize that the previous attempt failed, and automatically run using the option **-promptMode ASK**, which allows you to review, and where necessary correct, any parameters that caused the previous failure.

The script performs configuration actions in the following sequence:
1. Configuring Business Flow Manager.
2. Configuring Human Task Manager .
3. Configuring messaging infrastructure.
4. Configuring database access.
5. Configuring Process Choreographer Explorer.
6. Checking the WebSphere security configuration.

If you specify **-operationMode ARCHIVE** to configure a Business Process Archive Manager rather than a Business Process Choreographer configuration, the equivalent phases configure the Business Process Archive Manager, archive database, and Business Process Archive Explorer.

Log files

The following log files can help you solve problems that happen when running the bpeconfig.jacl script file:

* **bpeconfig.log**
* **wsadmin.traceout** – Unless you used the wsadmin **-tracefile** parameter to specify a different file name.
* **bpeconfig_*scope*.properties** contains the parameter values that were used. Where *scope* reflects the deployment target.

The bpeconfig.log and wsadmin.traceout files can be found in the logs subdirectory for your profile, and the **bpeconfig_*scope*.properties** file is in the properties subdirectory:

* `Linux` `UNIX` In the directories *profile_root*/**logs** and *profile_root*/**properties**
* `Windows` In the directories *profile_root***logs** and *profile_root***properties**

If you run the script in connected mode, also check the files **SystemOut.log** and **SystemErr.log** that can be found in the subdirectory of the **logs** directory that is named after the application server or deployment manager that the wsadmin scripting client connected to.

Related tasks:
"Using the bpeconfig.jacl script to configure Business Process Choreographer" on page 434
Describes how to use the **bpeconfig.jacl** script to configure Business Process Choreographer and all the necessary resources on a given server or cluster.

Creating the queue manager and queues for Business Process Choreographer:

This describes how to create the WebSphere MQ queue manager and queues.

WebSphere MQ must already be installed.

Note: Support for WebSphere MQ is deprecated.

If you are using WebSphere MQ as an external Java Message Service (JMS) provider, you must create the queue manager and queues.

1. Optional: If you are creating a production system, plan which disk drives the queue manager will use. Using default locations for persistent queue data and WebSphere MQ logs can have a negative impact on the performance of the queue manager. Consider changing these locations according to recommendations in the WebSphere MQ documentation.

2. If you are not creating a WebSphere MQ cluster setup, perform the following actions:

   a. Make sure that your user ID has the authority to create WebSphere MQ queues.

   b. Create the queue manager and queues:

      - **`Linux`** **`UNIX`** Enter:

        ```
        cd install_root/ProcessChoreographer/config
        createQueues.sh queueManager
        ```

      - **`Windows`** Enter:

        ```
        cd install_root\ProcessChoreographer\config
        createQueues.bat queueManager
        ```

      Where *queueManager* is the name of an existing queue manager, or the name to give to a new queue manager. If the named queue manager already exists, it is used to create the queues. If the queue manager does not exist, it is created and started before the default queues are created.

3. If you are creating a WebSphere cluster setup that uses a WebSphere MQ cluster, only perform Creating clustered queue managers and queues.

4. If you are creating a WebSphere cluster setup that uses a central queue manager, perform the following actions:

   a. Copy the create queues script file from the **config** subdirectory of the **ProcessChoreographer** directory on the server that hosts Process Server to the server that hosts the central queue manager:

      - **`Linux`** **`UNIX`** If your central queue manager is on a Linux or UNIX server, copy the file:
        ```
        createQueues.sh
        ```

      - **`Windows`** If your central queue manager is on a Windows workstation, copy the file:
        ```
        createQueues.bat
        ```

   b. On the server that hosts the queue manager, make sure that WebSphere MQ is installed, and that your user ID has the authority to create WebSphere MQ queues.

   c. Create the queue manager and queues:

      - **`Linux`** **`UNIX`** Enter:

        ```
        cd install_root/ProcessChoreographer/config
        createQueues.sh queueManager
        ```

      - **`Windows`** Enter:

        ```
        cd install_root\ProcessChoreographer\config
        createQueues.bat queueManager
        ```

      Where *queueManager* is the name to give the new queue manager.

   d. Add a listener for the new queue manager:

      - **`Linux`** **`UNIX`** Enter:

        ```
        runmqlsr -t tcp -p port -m queueManager &
        ```

      - **`Windows`** Enter:

        ```
        runmqlsr -t tcp -p port -m queueManager
        ```

      Where *port* is the port on which the listener listens.

The queue manager and queues exist.

Creating clustered queue managers and queues for Business Process Choreographer:

If you are creating a WebSphere cluster setup of Business Process Choreographer using a WebSphere MQ cluster, you must create the queue managers, queues, cluster, repositories, channels, and listeners.

1. If your WebSphere cluster consists of UNIX nodes, perform the following actions on each node:

   a. Make sure that your user ID has the authority to create WebSphere MQ queues.

   b. Create the get and put queue managers, make them members of the WebSphere MQ cluster, and create the queues by entering the commands:

   ```
   cd install_root/ProcessChoreographer/config
   createQueues.sh getQueueManager clusterName putQueueManager
   ```

   where:
   getQueueManager
   > The unique name to give to the get queue manager. This queue manager hosts all of the local queues.

   clusterName
   > The name of the WebSphere MQ cluster of which all the queue managers are a member.

   putQueueManager
   > The unique name for the put queue manager. This queue manager hosts no queues, which ensures that messages are distributed across all the get queues.

   If the queue managers already exist, they are used. If the queue managers do not exist, they are created and used.

   c. Start the WebSphere MQ command processor by entering the command:

   ```
   runmqsc getQueueManager
   ```

   d. For complex setups, it is recommended to enable remote administration of the queue manager by entering the following WebSphere MQ command:

   ```
   DEFINE CHANNEL('SYSTEM.ADMIN.SVRCONN') TYPE(CHLTYPE)
   ```

   e. If this queue manager is to be a repository for the WebSphere MQ cluster enter the WebSphere MQ command:

   ```
   ALTER QMGR REPOS('clusterName') REPOSNL(' ')
   ```

   f. Define a sender and a receiver channel for the queue manager to each repository that is not hosted on this server, by entering the following WebSphere MQ commands. For each cluster receiver channel:

   ```
   DEFINE CHANNEL('TO.repositoryQueueManager.TCP') +
        CHLTYPE(CLUSRCVR) +
        CLUSTER('clusterName') +
        CLUSNL(' ') +
        CONNAME('repositoryIP-Address(port)') +
        DESCR('Cluster receiver channel at repositoryQueueManager TCPIP') +
        MAXMSGL(4194304) +
        TRPTYPE(TCP) +
        MCAUSER('principal') +
        REPLACE
   ```

   For each cluster sender channel:

   ```
   DEFINE CHANNEL('TO.repositoryQueueManager.TCP') +
        CHLTYPE(CLUSSDR) +
        CONNAME('repositoryIP-Address(port)') +
        CLUSTER('clusterName') +
        CLUSNL(' ') +
        DESCR('Cluster sender channel to repositoryQueueManager TCPIP') +
        MAXMSGL(4194304) +
        TRPTYPE(TCP) +
        MCAUSER('targetPrincipal') +
        REPLACE +
        NPMSPEED (NORMAL)
   ```

where:

repositoryQueueManager
>   The name of the queue manager hosting a repository.

clusterName
>   The name of the WebSphere MQ cluster of which all the queue managers are a member.

repositoryIP-Address
>   The IP address of the node where the repository queue manager resides.

port The IP port that the repository queue manager is using.

principal, *targetPrincipal*
>   The MCAUSER to use for the receive and send channels. For more information about this value refer to the WebSphere MQ documentation.

g. For each queue manager, start a listener by entering the WebSphere MQ command:

```
runmqlsr -t tcp -p port -m QueueManager
```

2. If your WebSphere cluster consists of Windows nodes, perform the following actions on each node:

a. Make sure that your user ID has the authority to create WebSphere MQ queues.

b. Create the "get" queue manager, make it a member of the WebSphere MQ cluster, and create the queues by entering the commands:

```
cd install_root\ProcessChoreographer\config
createQueues.bat getQueueManager clusterName putQueueManager
```

where:

getQueueManager
>   The unique name to give to the get queue manager. This queue manager hosts all of the local queues.

clusterName
>   The name of the WebSphere MQ cluster of which all the queue managers are a member.

putQueueManager
>   The unique name for the put queue manager. This queue manager hosts no queues, which ensures that messages are distributed across all the get queues.

If the queues already exist they are used. If the queues do not exist, they are created and used.

c. Start the WebSphere MQ command processor by entering the command:

```
runmqsc queueManager
```

d. For complex setups, it is recommended that you enable remote administration of the queue manager by entering the following WebSphere MQ command:

```
DEFINE CHANNEL('SYSTEM.ADMIN.SVRCONN') TYPE(CHLTYPE)
```

e. If this queue manager is to be a repository for the WebSphere MQ cluster enter the WebSphere MQ command:

```
ALTER QMGR REPOS('clusterName') REPOSNL(' ')
```

f. Define a sender and a receiver channel for the queue manager to each repository that is not hosted on this server, by entering the following WebSphere MQ commands. For each cluster receiver channel:

```
DEFINE CHANNEL('TO.repositoryQueueManager.TCP') +
    CHLTYPE(CLUSRCVR) +
    CLUSTER('clusterName') +
    CLUSNL(' ') +
    CONNAME('repositoryIP-Address(port)') +
    DESCR('Cluster receiver channel at repositoryQueueManager TCPIP') +
    MAXMSGL(4194304) +
    TRPTYPE(TCP) +
    MCAUSER('principal') +
    REPLACE
```

For each cluster sender channel:

```
DEFINE CHANNEL('TO.repositoryQueueManager.TCP') +
    CHLTYPE(CLUSSDR) +
    CONNAME('repositoryIP-Address(port)') +
```

```
         CLUSTER('clusterName') +
         CLUSNL(' ') +
         DESCR('Cluster sender channel to repositoryQueueManager TCPIP') +
         MAXMSGL(4194304) +
         TRPTYPE(TCP) +
         MCAUSER('principal') +
         REPLACE +
         NPMSPEED (NORMAL)
```

where:

repositoryQueueManager
> The name of the queue manager hosting a repository.

clusterName
> The name of the WebSphere MQ cluster to which all the queue managers are a member.

repositoryIP-Address
> The IP address of the node where the repository queue manager resides.

port   The IP port that the repository queue manager is using.

principal
> The MCAUSER to use. For more information about this value, refer to the WebSphere MQ documentation.

g. For each queue manager, start a listener by entering the WebSphere MQ command:

```
runmqlsr -t tcp -p port -m QueueManager
```

3. Optional: To verify the status of the channels on a server, enter the WebSphere MQ command:

```
display chstatus(*)
```

The queue managers, queues, cluster, repositories, channels, and listeners exist.

Using the bpeconfig.jacl script to configure Business Process Archive Manager:

This describes how to use the **bpeconfig.jacl** script to configure a Business Process Archive Manager, Business Process Archive Explorer, and all the necessary resources on a given server or cluster.

You can also use this script to configure a Business Process Choreographer configuration, that case is described in "Using the bpeconfig.jacl script to configure Business Process Choreographer" on page 434.

The script uses the database parameters to generate and optionally run an SQL file, which creates the necessary database objects.

1. Make sure that you know which options and parameters you are going to use. Refer to the values you planned in "Planning for the Business Process Archive Manager" on page 115. For detailed information about the script, examples, its options and parameters, see "bpeconfig.jacl script file" on page 442.

2. Make sure that the Service Component Architecture (SCA) is configured. Using the administrative console perform the following:

    a. If you want to configure Business Process Archive Manager on a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then in the **Business Integration** section, click **Service Component Architecture**.

    b. If you want to configure Business Process Archive Manager on a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name*, then in the **Business Integration** section, click **Service Component Architecture**.

    c. If it is not enabled, select **Support the Service Component Architecture components**, select the same **Bus Member Location** that is used by the Business Process Choreographer runtime configuration that this Business Process Archive Manager will serve. Do not change the prefilled datastore configuration values for **Database Instance** or **Schema**. Click **Apply** and **Save**.

3. If you want bpeconfig.jacl to create the schema in the archive database, perform the following:

    a. If your archive database does not exist yet, and you are using one of the following databases:

- DB2 for z/OS
- Oracle
- A remote Microsoft SQL Server

Create an empty database manually according to the documentation for your database. For example, for Oracle, make sure that the schema name matches an Oracle user ID.

b. Make sure that the database client is on the path for the scripting client. For example, the client for DB2 is db2.exe.

c. Make sure that the application server is stopped.

d. Remember to use the -createDB yes option.

4. Invoke the bpeconfig.jacl script file, either in batch mode providing the options and configuration parameters that you planned, or in interactive mode.

For example, to configure Business Process Archive Manager on a cluster on a Windows platform, using a DB2 database, the batch mode command to run on the deployment manager might be like the following:

```
wsadmin -conntype none -f bpeconfig.jacl
        -adminGroups bpcadmins
        -cluster supportCluster
        -createDB no
        -createEventCollector no
        -dbJava d:\\programs\\IBM\\SQLLIB\\java
        -dbName BPEDB
        -dbSchema WPRBE00
        -dbServerName db2host.acme.com
        -dbTablespaceDir d:\\DB2\\tablespacedir
        -dbType DB2
        -dbUser db2user -dbPwd secret
        -driverType Universal
        -jmsBFMRunAsUser jmsuser -jmsBFMRunAsPwd secret
        -jmsHTMRunAsUser escalationuser -jmsHTMRunAsPwd secret
        -monitorGroups bpcmonitors
        -operationMode ARCHIVE
        -promptMode FAIL_IF_MISSING
        -reportFunction no
        -restAPIBFM http://wpshost.acme.com:80/rest/bpm/bfm
        -restAPIHTM http://wpshost.acme.com:80/rest/bpm/htm
```

For other platforms, the file system paths would be different. For details about the script file, refer to "bpeconfig.jacl script file" on page 442.

5. If you either used the -createDB no option to defer that creation of the database, or if the bpeconfig.jacl script failed create the database, you or your database administrator should perform the actions described in "Using a generated SQL script to create the database schema for Business Process Choreographer" on page 470.

6. If you used the **-reportFunction yes** option you must create the data source for the reporting function manually. Use the JNDI name that you specified with the **-reportDataSource** parameter.

7. If you are using the WebSphere MQ Java Message Service (JMS) provider, and you used the -createQM no option to prevent the script from creating the queue manager and queues, create the queue manager and queues now by performing "Creating the queue manager and queues for Business Process Choreographer" on page 457.

8. Restart the server or cluster where you configured Business Process Archive Manager.

9. Verify that the Business Process Archive Manager and Business Process Archive Explorer applications have started successfully.

a. Make sure that there are no error messages in the **SystemOut.log** file for the application server. On a cluster, check the log for all application servers in the cluster.

b. Verify that the following applications have started:

- **BPCArchiveExplorer_scope**

- **BPArchiveMgr_*scope***
- **TaskArchiveMgr_*scope***

Where, the value of *scope* is *nodeName_serverName*, if you configured Business Process Archive Manager on an application server, or the *clusterName* if you configured Business Process Archive Manager on a cluster.

10. Optional: If you want to change the JMS authentication user IDs, the run-as user IDs, or the mappings of roles onto users and groups, using the administrative console, click **Security** > **Business Integration security** to change the security settings.

11. If you have configured the people directory provider for the Business Process Choreographer configuration that this Business Process Archive Manager will be used for, then you must configure the people directory provider in the same way for the Business Process Archive Manager.

12. Map the Web modules for the BPArchiveMgr and TaskArchiveMgr applications to a Web server to achieve load balancing and failover. You might need to change the default context roots for the REST API and the JAX Web Services API so that they are unique for each combination of host name and port. To set the context roots perform the following:

    a. To set the context roots for the Business Process Archive Manager, click **Applications** > **Application Types** > **WebSphere enterprise applications** then **BPArchiveMgr_*scope*** > **Context Root for Web Modules**, where *scope* is either *node_name_server_name* or the *cluster_name* where Business Process Archive Manager is configured. Then make sure that the context root for the Web modules BFMRESTAPI and BFMIF_*scope*Web are correct and unique.

    b. To set the context roots for the Human Task Archive Manager, click **Applications** > **Application Types** > **WebSphere enterprise applications** then **TaskArchiveMgr_*scope*** > **Context Root for Web Modules**, where *scope* is either *node_name_server_name* or the *cluster_name* where Business Process Archive Manager is configured. Then make sure that the context root for the Web modules HTMRESTAPI and HTMIF_*scope*Web are correct and unique.

13. If you use the Business Process Archive Explorer: Change the REST endpoints to match the new context roots by clicking **Application servers** then either *server_name* or *cluster_name*, then under **Business Integration**, expand **Business Process Choreographer**, and click **Business Process Choreographer Explorer**, select the **BPCArchiveExplorer_*scope*** instance that you want to modify, and set the new value. For example, if the context root for the Business Flow Manager REST API is /rest/bpm/bfm then the full URL might be something like `http://system7.mycompany.com:9080/rest/bpm/bfm`.

    Note: If you mapped the modules to an HTTP server, proxy server, IP sprayer, load balancer, or similar server, the URL should be based on the hostname and port number for that server.

14. Optional: Update your virtual host configuration. By default, the web modules of the Business Process Choreographer applications are configured for the **default_host** virtual host. Make sure that the ports associated with the host alias are correct. You might need to add host aliases for the host names and ports of additional cluster members or for the Web server that is used. For more details about virtual hosts, refer to Virtual hosts.

Business Process Archive Manager and Business Process Archive Explorer are configured.

Using SQL scripts to create the database for Business Process Choreographer:

You might choose to create the database for Business Process Choreographer manually before you configure Business Process Choreographer, or even before you have installed the product.

You have performed "Planning the BPEDB database" on page 98.

Your organization might require that databases be created by a separate database administrator. If you use the administrative console or the bpeconfig.jacl script to configure Business Process Choreographer, customized SQL scripts are generated that you can give to your DBA to create the BPEDB database. However, if you want to create the database before configuring Business Process Choreographer, or even

before product installation, your DBA must use the non-customized SQL scripts. This topic describes how to use the non-customized SQL scripts, which are available on the product media.

On the server that hosts the database, create the database according to the description for your database system.
- Creating a DB2 Express database for Business Process Choreographer.
- "Creating a DB2 for Linux, UNIX, and Windows database for Business Process Choreographer."
- "Creating a DB2 for z/OS database for Business Process Choreographer" on page 466.
- "Creating a Microsoft SQL Server database for Business Process Choreographer" on page 467.
- "Creating an Oracle database for Business Process Choreographer" on page 469.

The Business Process Choreographer database exists.

Creating a DB2 for Linux, UNIX, and Windows database for Business Process Choreographer:

Only use this task if you want to create a DB2 database for Business Process Choreographer before you configure Business Process Choreographer, or before you have installed the product.

You completed "Planning the BPEDB database" on page 98.
1. Install DB2 on the server that hosts the database.
2. Install a DB2 client on all remote application servers that use a type-2 Java Database Connectivity (JDBC) driver to access the database.
3. Copy all the Business Process Choreographer database SQL script files to the server that hosts the database. The scripts are located in the following directories:

   - **Linux** **UNIX**

     – Location on the product media: *media_root* or *extract_directory*/dbscripts/ProcessChoreographer/DB2
     – Location after installation: *install_root*/dbscripts/ProcessChoreographer/DB2

   - **Windows**

     – Location on the product media: *media_root* or *extract_directory*\dbscripts\ProcessChoreographer\DB2
     – Location after installation: *install_root*\dbscripts\ProcessChoreographer\DB2
4. Change to the directory where you copied the SQL scripts.
5. If you want to use an existing database, skip to step 10 on page 465.
6. Create a DB2 instance on the database server.
7. If you have a Symmetric Multi-Processor (SMP) server check how many processors can be used by DB2. Check your license:

   - **AIX** Enter the command:

     `/usr/opt/db2_08_01/adm/db2licm -l`

   - **Solaris** **Linux** Enter the command:

     `/opt/IBM/db2/V8.1/adm/db2licm -l`

   If necessary, change the number of processor licenses using either the **db2clim** command or the DB2 License Center.
8. Create a new database. The database should have a page size of 8K. Make sure that the database supports Unicode (UTF-8). Without Unicode support, it cannot store all characters that can be handled in Java code, and you can run into code page conversion problems when a client uses an incompatible code page.

9. Optional: If you only want to create a non-production database, named BPEDB, using default settings, for stand-alone development, evaluation, or demonstration purposes:

   a. Enter the following command:

      ```
      db2 -tf createDatabase.sql
      ```

   b. Skip to step 11.

10. If the database is for a production system, create the table space and schema:

    a. Make sure that you use a user ID that has administrator rights for the database system.

    b. Customize a copy of the `createTablespace.sql` table space creation script according to the instructions in the file's header, using the values that you planned in "Planning the BPEDB database" on page 98.

    c. Make sure that you have administrator rights for the database system. The user ID that you use to create the schema must be the same one that you specify when configuring the data source for Business Process Choreographer.

    d. Make sure that you are attached to the correct instance. Check the DB2INSTANCE environment variable.

    e. To connect to a database named *database_name*, in the DB2 command-line processor, enter the command:

       ```
       db2 connect to database_name
       ```

    f. To create the table spaces, enter the command:

       ```
       db2 -tf createTablespace.sql
       ```

       Make sure that the script output contains no errors. If errors occur, you can drop the table space using the `dropTablespace.sql` script.

    g. Customize a copy of the `createSchema.sql` schema creation script according to the instructions in the file's header, using that values that you planned in "Planning the BPEDB database" on page 98.

    h. To create the schema (tables, indexes, and views) in the DB2 command-line processor, enter the command:

       ```
       db2 -tf createSchema.sql
       ```

       Make sure that the script output contains no errors. If you want to drop the schema, use the `dropSchema.sql` script.

    Note: If you do not create the table space and schema now, you must use the **Create tables** option later so that the default table space and schema will be created the first time that Business Process Choreographer attempts to use the database.

11. On each application server that remotely accesses the database:

    a. Catalog the database by entering the command:

       ```
       db2 catalog database database_name as database_alias at node node_name
       ```

       For more information about cataloging a database refer to the DB2 documentation.

    b. Verify that you can connect to the database by entering the commands:

       ```
       db2 connect to database_alias user user_ID using password
       db2 connect reset
       ```

The database for Business Process Choreographer exists.

Perform Specifying initial DB2 database settings.

Creating a DB2 for z/OS database for Business Process Choreographer:

Only use this task if you want to create a DB2 for z/OS database for use by IBM Business Process Manager Business Process Choreographer that is running on a Linux, UNIX, or Windows platform and have not yet configured Business Process Choreographer, or you have not yet installed the product.

You completed "Planning the BPEDB database" on page 98.

This topic describes how to create a DB2 for z/OS database and, optionally, to verify that it is reachable from the server that hosts the application server.

1. Optional: You have already installed IBM Business Process Manager Advanced on a UNIX, Linux, or Windows server.

2. Copy all the Business Process Choreographer database script files to the z/OS server that hosts the database. The scripts are located in the following directories:

   - Linux   UNIX

     – Location on the product media: *media_root* or *extract_directory*/dbscripts/ ProcessChoreographer/DB2zOS

     – Location after installation: *install_root*/dbscripts/ProcessChoreographer/DB2zOS

   - Windows

     – Location on the product media: *media_root* or *extract_directory*\dbscripts\ ProcessChoreographer\DB2zOS

     – Location after installation: *install_root*\dbscripts\ProcessChoreographer\DB2zOS

3. On the z/OS server that hosts the database:

   a. Log on the native z/OS environment.

   b. If multiple DB2 systems are installed, decide which subsystem you want to use.

   c. Make a note of the IP port to which the DB2 subsystem is listening.

   d. Create the database and storage group. Perform one of the following:

      - Use the DB2 administration menu to create a new database and storage group.

      - Edit a copy of the `createDatabase.sql` script file according to the instructions in the header, using the values that you planned in "Planning the BPEDB database" on page 98, then run the script. To run the script, enter the command:

        `db2 -tf createDatabase.sql`

   e. Decide which user ID is used to connect to the database from the remote server running Process Server. Normally, for security reasons, this user ID is not the one that you used to create the database.

   f. Grant the user ID the rights to access the database and storage group. This user ID must also have permission to create new tables for the database.

   g. Decide if you want to create the tables and views in the schema of the connected user ID or if you want to customize the schema qualifier. If a single user ID accesses multiple databases with tables of the same name, you must use different schema qualifiers to avoid name collisions.

   h. Customize a copy of the `createTablespace.sql` table space creation script according to what you planned in "Planning the BPEDB database" on page 98 and the instructions in the header. Replace @STOGRP@ with the storage group name and replace @DBNAME@ with the database name (not the subsystem name).

   i. Run your customized version of the table space creation script. For example, to run the script, enter the command:

      `db2 -tf createTablespace.sql`

      If you want to drop the table space, customize and run the `dropTablespace.sql` script.

j. Edit the `createSchema.sql` create schema script according to what you planned in "Planning the BPEDB database" on page 98 and the instructions in the header.

   1) Replace @STOGRP@ with the storage group name.

   2) Replace @DBNAME@ with the database name (not the subsystem name).

   3) Replace @SCHEMA@ with the schema qualifier or remove @SCHEMA@ (including the following dot) from the script. A custom schema qualifier can only be used with the DB2 Universal JDBC driver.

k. Run your customized version of the create schema script. For example, to run the script, enter the command:

```
db2 -tf createSchema.sql
```

   If this script does not work, or if you want to remove the tables and views, use the `dropSchema.sql` script to drop the schema, but replace @SCHEMA@ before running the script.

4. Optional: On any server that will host a Business Process Choreographer configuration:

   a. Make sure that you have DB2 Connect™ Gateway installed. DB2 Connect Gateway is part of the DB2 UDB ESE package, but you can also install it separately.

   b. Catalog the remote database using the following commands in a DB2 command line window:

```
catalog tcpip node zosnode remote host_name server IP_port ostype mvs
catalog database location as database_alias at node zosnode
        authentication dcs
catalog dcs database database_alias parms ',,INTERRUPT_ENABLED'
```

   where

   zosnode
      is a local alias for the remote z/OS node.

   host_name
      is either the TCP/IP address or alias of the remote z/OS system.

   IP_port
      is the port number where the DB2 subsystem is listening.

   database_alias
      is the local alias to access the remote database.

   location
      is the remote DB2 location name. To find out the location name, log on to TSO and enter the following SQL query on the selected subsystem using one of the available query tools.

```
select current server from sysibm.sysdummy1
```

   c. Make sure that the sync point manager instance name is specified. Enter the following commands:

```
db2 update dbm cfg using SPM_NAME host_name
db2 update dbm cfg using SPM_LOG_FILE_SZ log_file_size
```

   d. Verify that you can establish a connection to the remote subsystem by entering the following command:

```
db2 connect to database_alias user user_ID using password
db2 connect reset
```

The database for Business Process Choreographer exists.

Creating a Microsoft SQL Server database for Business Process Choreographer:

Only use this task if you want to create a Microsoft SQL Server database for Business Process Choreographer before you configure Business Process Choreographer, or before you have installed the product.

You completed "Planning the BPEDB database" on page 98.

1. Install a Microsoft SQL Server, on the server that hosts the database. Make sure that the following requirements are met:
   - The server must support Unicode.
   - The database server must be configured for distributed transactions.
   - The instance must be case-sensitive instance. If you already have an SQL Server that was created with the case-insensitive option, run the rebuild master tool and change the collation settings to case-sensitive.

   For more information about these configuration options, refer to the documentation for Microsoft SQL Server.

2. Make sure that the database server and the Distributed Transaction Coordinator (DTC) are running.

3. Copy all the Business Process Choreographer database SQL script files to the server that hosts the database. The scripts are located in the following directories:

   - **Windows**
     - Location on the product media: *media_root* or *extract_directory*\dbscripts\ ProcessChoreographer\SQLServer
     - Location after installation: *install_root*\dbscripts\ProcessChoreographer\SQLServer
   - **Linux** **UNIX** Accessing a remote Microsoft SQL Server database:
     - Location on the product media: *media_root* or *extract_directory*/dbscripts/ ProcessChoreographer/SQLServer
     - Location after installation: *install_root*/dbscripts/ProcessChoreographer/SQLServer

4. Change to the directory where you copied the SQL scripts.

5. Perform one of the following:
   - If you want to create a non-production SQL Server database, named "BPEDB", for stand-alone development, evaluation, or demonstration purposes:
     a. Run one of the following scripts, as described in the header of the file.
        - `createDatabase.sql`
        - `createDatabaseUnicode.sql` for a Unicode database

        For example, enter:
        ```
        sqlcmd -U userID -P password -i createDatabase.sql
        ```
     b. Make sure that the script output contains no errors. If errors occur, you can drop the schema using the `dropSchema.sql` script.
   - If you want to create a production SQL Server database, create your database manually:
     a. Create the database, for example, named "BPEDB".
     b. To create the schema, customize a copy of one of the following scripts, as described in the header of the file, using the values you planned, then run it.
        - `createSchema.sql`
        - `createSchemaUnicode.sql` if you created a Unicode database

        For example, enter:
        ```
        sqlcmd -U userID -P password -i createSchema.sql
        ```
     c. Make sure that the script output contains no errors. If errors occur, you can drop the schema using the `dropSchema.sql` script.

The database for Business Process Choreographer exists.

Creating an Oracle database for Business Process Choreographer:

Only use this task if you want to create an Oracle database for Business Process Choreographer before you configure Business Process Choreographer, or before you have installed the product.

You completed "Planning the BPEDB database" on page 98.

1. Install the Oracle server on the computer that hosts the database.

2. **Linux** **UNIX** Perform the following::

   a. Make sure that the environment variables *ORACLE_BASE* and *ORACLE_HOME* are set for the root user.

   b. If you are using Oracle 10g, create a soft link to the Oracle library `libclnt.so.10.1` in the `/usr/lib` directory.

3. Check the class path to be sure that your JDBC driver is using the ojdbc6.jar file.

4. Create an Oracle database using the Database Configuration Assistant, for example, with the name BPEDB. There is no script to quickly create a default Oracle database for Business Process Choreographer. Make sure that you select the JServer option for the database. The database must be created to have a Unicode code page.

5. Start the Oracle listener by entering the command:

   `lsnrctl start`

6. Optional: If you do not want to customize the table space and schema, you can skip the rest of the steps in this task, in which case, the default table space and schema will be created the first time that Business Process Choreographer attempts to use the database.

7. Copy all the Business Process Choreographer database SQL script files to the server that hosts the database. The scripts are located in the following directories:

   - **Linux** **UNIX**

     – Location on the product media: *media_root* or *extract_directory*/dbscripts/ProcessChoreographer/Oracle

     – Location after installation:*install_root*/dbscripts/ProcessChoreographer/Oracle

   - **Windows**

     – Location on the product media:*media_root* or *extract_directory*\dbscripts\ProcessChoreographer\Oracle

     – Location after installation:*install_root*\dbscripts\ProcessChoreographer\Oracle

8. Change to the directory where you copied the SQL scripts.

9. If you do not want to create the schema in the default instance, set the *ORACLE_SID* environment variable to the SID of the database you created in step 4.

10. Make sure that the user who runs these scripts has at least the following database privileges: CREATE SESSION, CREATE TABLESPACE, DROP TABLESPACECREATE TABLE, and CREATE VIEW.

11. Customize a copy of the `createTablespace.sql` table space creation script according to what you planned in "Planning the BPEDB database" on page 98 and the instructions in the header of the script file.

12. To create the table spaces, run the `createTablespace.sql` script. For test purposes, you can use the same location for all table spaces and pass the path as a command-line argument to the script, for example, on a Windows system, using user ID "bpeuser", password "bpepwd", database name "BPEDB", and table space path `d:\mydb\ts`, enter:

    `sqlplus bpeuser/bpepwd@BPEDB @createTablespace.sql d:\mydb\ts`

    If you want to drop the table spaces, you can use the `dropTablespace.sql` script.

13. Make sure that the user who will own the tables is granted sufficient quota on all the table spaces that were created in the previous step.

14. Edit the schema creation script `createSchema.sql` according to the instructions at the top of the file, and replace the placeholder @SCHEMA@ with the name of the schema. If the @SCHEMA@ is different from the user who runs the `createSchema.sql` script, ensure that this user has the following database privileges: **CREATE ANY TABLE**, **ALTER ANY TABLE**, **CREATE ANY INDEX**, and **CREATE ANY VIEW**.

15. To create the schema, run the `createSchema.sql` script. For example, on Windows systems, enter:

    `sqlplus bpeuser/bpepwd@BPEDB @createSchema.sql`

The database for Business Process Choreographer exists.

Using a generated SQL script to create the database schema for Business Process Choreographer:

When you configure Business Process Choreographer, an SQL script is generated that creates the database objects for Business Process Choreographer.

You have used the administrative console or the **bpeconfig.jacl** script to configure Business Process Choreographer. If you used the bpeconfig.jacl script to configure Business Process Choreographer, either you used the **-createDB** no option to defer creating the database objects, or the bpeconfig.jacl script failed to create the database.

All the relevant configuration parameters that you provided when configuring Business Process Choreographer have been substituted in the generated SQL file. You either want the database for a high-performance Business Process Choreographer configuration, or your database administrator must create the database for you, or both.

1. Locate the generated `createSchema.sql` SQL script.
   - If you configured Business Process Choreographer in a network deployment environment using the administrative console or by running the `bpeconfig.jacl` script in connected mode, the `createSchema.sql` script file will be generated on the node of the deployment manager.
   - If you configured Business Process Choreographer on a standalone server using the administrative console or by running the `bpeconfig.jacl` script in connected mode, the `createSchema.sql` script file will be generated on the node where you invoked **wsadmin**.
   - If you configured Business Process Choreographer by running the `bpeconfig.jacl` script in disconnected mode, the `createSchema.sql` script file will be generated on the node of the standalone server.
   - Linux   UNIX
     – If you specified a schema qualifier, the generated script is: ***profile_root*/dbscripts/ ProcessChoreographer/*database_type*/*database_name*/*database_schema*/createSchema.sql**.
     – If you did **not** specify a schema qualifier, the generated script is: ***profile_root*/dbscripts/ ProcessChoreographer/*database_type*/*database_name*/createSchema.sql**.
   - Windows
     – If you specified a schema qualifier, the generated script is: ***profile_root*\dbscripts\ ProcessChoreographer*database_type**database_name**database_schema*\createSchema.sql**
     – If you did **not** specify a schema qualifier, the generated script is: ***profile_root*\dbscripts\ ProcessChoreographer*database_type**database_name*\createSchema.sql**

   Note: For SQL Server, there is also a version named **createSchemaUnicode.sql**, which you should use if your database is configured for Unicode.

   Where:

   database_type
       is one of the following strings, which identify the database systems that are supported by the generated scripts:
       - DB2

- DB2zOS
- Oracle
- SQLServer

database_name
    is the name of your database.

database_schema
    is the name of the schema, if you are using one.

2. If the database does not yet exist, get your database administrator to create the database and user IDs according to the values you planned in "Planning the BPEDB database" on page 98 and "Planning security, user IDs, and authorizations" on page 91.

   Note: This step is not necessary if your database is one of the following, because the generated script will create the database:

   - DB2 for Linux, UNIX, or Windows local database

3. If the database is remote, copy the generated script to the database host. If you are not authorized to perform this, give your database administrator a copy of the script and discuss your requirements with her.

4. You or your database administrator can customize the SQL script:

   a. For a high-performance system specify the allocation of disks and table spaces that you planned in step 5 on page 100 of "Planning the BPEDB database" on page 98.

   b. If you used the administrative console to configure Business Process Choreographer:

      - For DB2 on z/OS: Replace @STOGRP@ with the storage group name, the default value is SYSDEFLT.
      - If you do not want the table spaces to be created in your database system's default location for new table spaces, modify the appropriate SQL statements to specify the desired table space directory.

5. Run the SQL script on the database host using one of the following commands:

Option	Description
For DB2 on Linux, UNIX, or Windows	`db2 -tf createSchema.sql`

For DB2 on z/OS	For the ASCII version:
	`db2 -tf createSchema.sql`
	
	For the EBCDIC version:
	`db2 -tf createSchema.ddl`

For an Oracle database	`sqlplus userID/password` `    @database_name@createSchema.sql`

For an SQL Server database	For an ASCII database:
	`sqlcmd -U userID`
	`        -P password`
	`        -d database_name`
	`        -i createSchema.sql`
	
	For a Unicode database:
	`sqlcmd -U userID`
	`        -P password`
	`        -d database_name`
	`        -i createSchemaUnicode.sql`

6. For all existing Business Process Choreographer configurations, configure Java Database Connectivity (JDBC) to access the database remotely: Perform the following steps:

- On each node that hosts a member of the cluster where you configured Business Process Choreographer.
- On any server that runs Business Process Choreographer.

a. If the database server is different to the Business Process Choreographer server, install a suitable type-2 database client or type-4 JDBC driver on the server that hosts the application server.

b. If you are using a type-2 JDBC driver, make the new database known to the database client. The database must be catalogued and accessible through an alias name.If you are using a type-2 JDBC driver, make the new database known to the database client by performing the following:

   For DB2 Universal Database
   > The database must be cataloged and accessible through an alias name.

   For DB2 for z/OS
   > The database must be cataloged and accessible through an alias name.

   For Microsoft SQL Server
   > This step does not apply because only type-4 JDBC providers are supported.

   For Oracle
   > The TCP net service name (TNS) is used to access the database.

c. Using the administrative console, test the connection to the database.

   1) Click **Resources** > **JDBC** > **Business Integration Data Sources**

   2) If necessary, select a different scope and click **Apply**.

      Note: For clustered Business Process Choreographer configurations, the data source is defined at the cluster level. For non-clustered configurations, the data source is defined at the server level.

   3) Locate and select the data source with the JNDI name **jdbc/BPEDB**.

   4) Click **Test connection**.

   5) You should see a message indicating that the test connection was successful.

The Business Process Choreographer database exists.

Configuring the people directory provider:

Business Process Choreographer can use one of four people directory providers to determine who can start processes or claim activities or tasks. Two providers can be used in their default configurations (Local operating system user registry, WebSphere Application Server user registry). The Virtual Member Manager and LDAP people directory providers can usually be used in its default configuration, but in some cases, it must be configured.

Each type of supported people directory service requires a corresponding people directory provider plug-in. Table 183 lists the supported people directory providers and corresponding plug-ins, which are installed by default.

Table 183. Supported people directory providers and their plug-ins

People directory provider	People directory provider plug-in name
Virtual Member Manager (VMM)	**VMM people directory provider**
Lightweight Directory Access Protocol (LDAP) directory	**LDAP people directory provider**
Local operating system user registry	**System people directory provider**
WebSphere Application Server user registry	**User Registry people directory provider**

- To use VMM and LDAP, you will probably need to customize the configuration before using it, as described in the following topics.

- You can use the user registry and system plug-ins with the default configurations. Because you can use these people directory providers without further customization, they are often ideal for development and test environments.

Configuring the Virtual Member Manager people directory provider:

You configure the Virtual Member Manager (VMM) people directory provider so that Business Process Choreographer can perform people assignment, which determines who can start processes or claim activities or tasks. The default configuration of the VMM people directory provider is ready to use, and only needs to be configured if you introduce custom people assignment criteria.

To configure the VMM people directory provider, you must have a configured federated repository.

If you created a customized version of the VMM transformation file and Business Process Choreographer is configured on a cluster, place your version of the transformation file in the `ProcessChoreographer/Staff` directory to make it available on each Process Server installation that hosts members of the cluster.

1. In the administrative console, click **Resources** > **People directory provider**.
2. Select the appropriate node from the following list:

Option	Description
For a standalone profile	Only one node is displayed.
In a network deployment environment, where Business Process Choreographer is configured on one server	Select the node that contains the server.
In a network deployment environment, where Business Process Choreographer is configured on a cluster	You must configure the people directory provider (perform step 3) on every node that hosts members of the cluster. Select the first node, configure the people directory provider on that node, then repeat the configuration (step 3) for all of the other nodes that host members of the cluster.

3. To create a new VMM people directory configuration:
   a. Click **VMM People Directory Provider**.
   b. In the **Additional Properties**, select **People directory configuration**.
   c. Click **New** > **Browse**, and select your copy of the VMM transformation file. If the node agent is running, you can browse the file system of remote nodes to select the file.
   d. Click **Next** to copy the file to the **ProcessChoreographer/Staff** directory on the selected node.
   e. Enter an administrative name for the new people directory configuration, and optionally, a description
   f. Enter a unique Java Naming and Directory Interface (JNDI) name to identify this configuration to the system, for example, `bpe/staff/myvmmconfiguration`.

   Note: There are no other configuration parameters
   g. Click **OK**, then click **Save**.
4. To activate the provider configuration, stop and start the server or servers where you configured the provider.

The VMM people directory provider is configured. If you have problems with this procedure, refer to the *Troubleshooting IBM Business Process Manager Advanced* PDF.

Configuring the LDAP people directory provider:

You configure the Lightweight Directory Access Protocol (LDAP) people directory provider so that Business Process Choreographer can perform people assignment, which determines who can start processes or claim activities or tasks.

To configure LDAP, you must plan for it, as described in "Planning for the people directory provider" on page 108.

The LDAP people directory provider configuration is initialized with a URL that points to a local LDAP server. You must change the URL later to point to the actual LDAP server, which is normally remote to the application server. The LDAP people directory provider is configured for an LDAP server that allows anonymous access.

1. Make a copy of the standard transformation file for LDAP, and give it another name. For example, **myLDAPTransformation.xsl**. Copy it from the following location:

   - `Linux` `UNIX` *install_root*/**ProcessChoreographer/Staff/LDAPTransformation.xsl**.

   - `Windows` *install_root***ProcessChoreographer\\Staff\\LDAPTransformation.xsl**.

2. Adapt the copy of the transformation file to suit the schema for your organization, as described in "Adapting the LDAP transformation file" on page 475.
   CAUTION:
   Do not modify the original version of the transformation file because it can be overwritten without warning when you apply a service pack or fix pack.

3. If Business Process Choreographer is configured on a cluster, place the copy of the transformation file in the **ProcessChoreographer/Staff** directory to make it available on each Process Server installation that hosts members of the cluster.

4. In the administrative console, click **Resources** > **People directory provider**.

5. Select the appropriate node from the following list:

Option	Description
For a stand-alone profile	Only one node is displayed.
In a network deployment environment, where Business Process Choreographer is configured on one server	Select the node that contains the server.
In a network deployment environment, where Business Process Choreographer is configured on a cluster	Configure the people directory provider (complete step 6) on every node that hosts the cluster members. Select the first node, configure the people directory provider on that node, then repeat the configuration (step 6) for all the other nodes that host the cluster members.

6. Create an LDAP configuration on the selected node.

   a. Click **LDAP People Directory Provider**.

   b. Under **Additional Properties**, click **People directory configuration**.

   c. Click **New** > **Browse**, and select the copy of the XSL transformation file that you adapted in step 2. If the node agent is running, you can browse the file system of remote nodes to select the file.

   d. Click **Next** to copy the file to the **ProcessChoreographer\\Staff** directory on the selected node.

   e. Enter an administrative name for the new people directory configuration, and optionally, a description

   f. Enter a unique Java Naming and Directory Interface (JNDI) name for human tasks to use to reference this provider. For example, `bpe/staff/ldapserver1`.

   g. Click **Apply**, then click **Custom Properties**.

   h. For each of the required properties and for any optional properties that you planned in 2 on page 108, choose whichever option applies and complete the following steps:

- To change an existing property, click the name of the property, enter a value, and click **OK**.
- To create an additional property, edit one pair of **additionalParameterName<number>** and **additionalParameterValue<number>** custom properties as required, for example:
  - Set the value of **additionalParameterName1** to java.ldap.referral.
  - Set the value of **additionalParameterValue1** to follow.

   i. To apply the changes, click **Save**.

7. To activate the provider configuration, stop and start the server or servers where you configured the provider.
8. If you have problems with any of these steps, refer to the *Troubleshooting IBM Business Process Manager Advanced* PDF.

Human tasks and processes can now use the people assignment services to resolve people assignment queries and to determine which activities can be performed by which people.

Adapting the LDAP transformation file:

Describes how to adapt the LDAP transformation XSL file to suit your organization's LDAP schema.

The default **LDAPTransformation.xsl** file maps predefined people assignment criteria to LDAP queries, which make use of elements of the default LDAP schema. This schema assumes the following:

- The LDAP object class for group entries is **groupOfName**.
- The group entry attribute that contains the member distinguished names (DNs) for the group is **member**.
- The LDAP object class for person entries is **inetOrgPerson**.
- The attribute that contains the login ID in a person entry is **uid**.
- The person entry attribute that contains their e-mail address is **mail**.
- The person entry attribute containing the distinguished name of the manager of a person is **manager**.

If your LDAP schema uses name for object class and attribute names that are different from those listed above, you perform the following steps.

1. Make a copy of the standard transformation file for LDAP, and give it another name, for example, **myLDAPTransformation.xsl**. The standard XSL transformation for LDAP is located in:

-    `Linux`   `UNIX`   *install_root*/**ProcessChoreographer/Staff/LDAPTransformation.xsl**.
-    `Windows`   *install_root***ProcessChoreographer\Staff\LDAPTransformation.xsl**.

2. In the copy of the file, change the names of the object classes and attributes to match the names used by your LDAP schema. For most situations, you can change the settings for all people assignment criteria by editing the variable declaration part of the file:

```
<xsl:variable name="DefaultGroupClass">groupOfNames</xsl:variable>
<xsl:variable name="DefaultGroupClassMemberAttribute">member</xsl:variable>

<xsl:variable name="DefaultPersonClass">inetOrgPerson</xsl:variable>
<xsl:variable name="DefaultUserIDAttribute">uid</xsl:variable>
<xsl:variable name="DefaultMailAttribute">mail</xsl:variable>
<xsl:variable name="DefaultManagerAttribute">manager</xsl:variable>
```

CAUTION:
Do not modify the original version of the standard transformation file because it might be overwritten without warning when you apply a service pack or fix pack.

You can apply changes within the XSL templates that transform the individual staff assignment criteria, as illustrated in the following examples.

Example: GroupMembers

Changing the object class for group entries to groupOfUniqueNames, the group entry attribute containing the member DN list to uniqueMember, and the person entry attribute containing the login in to cn:

```
<sldap:usersOfGroup>
...

<sldap:attribute>
<xsl:attribute name="name">uniqueMember</xsl:attribute>
<xsl:attribute name="objectclass">groupOfUniqueNames</xsl:attribute>
<xsl:attribute name="usage">recursive</xsl:attribute>
</sldap:attribute>


...
<sldap:attribute>
<xsl:attribute name="name">cn</xsl:attribute>
<xsl:attribute name="objectclass">inetOrgPerson</xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>
</sldap:attribute>
...
<sldap:resultObject>
<xsl:attribute name="objectclass">groupOfUniqueNames</xsl:attribute>
<xsl:attribute name="usage">recursive</xsl:attribute>
<sldap:resultAttribute>
<xsl:attribute name="name">uniqueMember</xsl:attribute>
<xsl:attribute name="destination">intermediate</xsl:attribute>
</sldap:resultAttribute>
</sldap:resultObject>


<sldap:resultObject>
<xsl:attribute name="objectclass"><xsl:value-of select="$DefaultPersonClass"/></xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>


<sldap:resultAttribute>
<xsl:attribute name="name">cn</xsl:attribute>
<xsl:attribute name="destination">userID</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultMailAttribute"/></xsl:attribute>
<xsl:attribute name="destination">eMailAddress</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultLocaleAttribute"/></xsl:attribute>
<xsl:attribute name="destination">preferredLocale</xsl:attribute>
</sldap:resultAttribute>
</sldap:resultObject>

</sldap:usersOfGroup>
```

Example: GroupMembersWithoutFilteredUsers

Changing the LDAP filter operator to >=.

```
<sldap:StaffQueries>
<sldap:usersOfGroup>
...
</sldap:usersOfGroup>

<sldap:intermediateResult>
<xsl:attribute name="name">filteredusers</xsl:attribute>
<sldap:search>
<xsl:attribute name="filter">
```

```
<xsl:value-of select="staff:parameter[@id='FilterAttribute']"/>
  >=
<xsl:value-of select="staff:parameter[@id='FilterValue']"/>
</xsl:attribute>
...
<sldap:search>
...

</sldap:intermediateResult>
...
</sldap:StaffQueries>
```

Example: GroupSearch

Changing the search attribute to MyType, the object class to mypersonclass, and the attribute containing the login ID to myuid.

```
<sldap:StaffQueries>
...
<sldap:search>
<xsl:attribute name="filter">
(&
...
<xsl:if test="staff:parameter[@id='MyType']!="">
(<xsl:value-of select="$GS_Type"/>=
<xsl:value-of select=staff:parameter[@id='Type']"/>)
</xsl:if>
)
...
</xsl:attribute>

<sldap:attribute>
<xsl:attribute name="name">myuid</xsl:attribute>
<xsl:attribute name="objectclass">mypersonclass</xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>
</sldap:attribute>
...
<sldap:resultObject>
<xsl:attribute name="objectclass">mypersonclass</xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>

<sldap:resultAttribute>
<xsl:attribute name="name">myuid</xsl:attribute>
<xsl:attribute name="destination">userID</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultMailAttribute"/></xsl:attribute>
<xsl:attribute name="destination">eMailAddress</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultLocaleAttribute"/></xsl:attribute>
<xsl:attribute name="destination">preferredLocale</xsl:attribute>
</sldap:resultAttribute>
</sldap:resultObject>

<sldap:search>
</sldap:StaffQueries>
```

Example: Manager of Employee

Changing the attribute containing the manager DN to managerentry and the source of the manager login ID attribute to name.

```
<sldap:StaffQueries>

<sldap:intermediateResult>
...
<sldap:user>
...
<xsl:attribute name="name">managerentry</xsl:attribute>
...
<sldap:resultObject>
<xsl:attribute name="objectclass"><xsl:value-of select="$DefaultPersonClass"/></xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>

<sldap:resultAttribute>
<xsl:attribute name="name">managerentry</xsl:attribute>
<xsl:attribute name="destination">intermediate</xsl:attribute>
</sldap:resultAttribute>
</sldap:resultObject>
</sldap:user>
</sldap:intermediateResult>

<sldap:user>
...
<xsl:attribute name="name">name</xsl:attribute>
...
<sldap:resultObject>
<xsl:attribute name="objectclass"><xsl:value-of select="$DefaultPersonClass"/></xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>

<sldap:resultAttribute>
<xsl:attribute name="name">name</xsl:attribute>
<xsl:attribute name="destination">userID</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultMailAttribute"/></xsl:attribute>
<xsl:attribute name="destination">eMailAddress</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultLocaleAttribute"/></xsl:attribute>
<xsl:attribute name="destination">preferredLocale</xsl:attribute>
</sldap:resultAttribute>
</sldap:resultObject>

</sldap:user>
</sldap:StaffQueries>
```

Example: PersonSearch

Changing the search attribute to MyAttribute, the object class to mypersonclass, and the source of the return attribute to myuid.

```
<sldap:StaffQueries>
...
<sldap:search>
<xsl:attribute name="filter">
(&
...
<xsl:if test="staff:parameter[@id='MyAttribute']!="">
(<xsl:value-of select="$PS_UserID"/>=
<xsl:value-of select=staff:parameter[@id='UserID']"/>)
)
</xsl:if>
...
</xsl:attribute>
```

```
<sldap:attribute>
<xsl:attribute name="name">myuid</xsl:attribute>
<xsl:attribute name="objectclass">mypersonclass</xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>
</sldap:attribute>
...
<sldap:resultObject>
<xsl:attribute name="objectclass">mypersonclass</xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>

<sldap:resultAttribute>
<xsl:attribute name="name">myuid</xsl:attribute>
<xsl:attribute name="destination">userID</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultMailAttribute"/></xsl:attribute>
<xsl:attribute name="destination">eMailAddress</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultLocaleAttribute"/></xsl:attribute>
<xsl:attribute name="destination">preferredLocale</xsl:attribute>
</sldap:resultAttribute>
</sldap:resultObject>
</sldap:search>
</sldap:StaffQueries>
```

Example: Users

Changing the source of the return attribute to myuid and the object class to mypersonclass.

```
<sldap:user>
...
<xsl:attribute name="attribute">myuid</xsl:attribute>
<xsl:attribute name="objectclass">mypersonclass</xsl:attribute>

<sldap:resultObject>
<xsl:attribute name="objectclass">mypersonclass</xsl:attribute>
<xsl:attribute name="usage">simple</xsl:attribute>

<sldap:resultAttribute>
<xsl:attribute name="name">myuid</xsl:attribute>
<xsl:attribute name="destination">userID</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultMailAttribute"/></xsl:attribute>
<xsl:attribute name="destination">eMailAddress</xsl:attribute>
</sldap:resultAttribute>
<sldap:resultAttribute>
<xsl:attribute name="name"><xsl:value-of select="$DefaultLocaleAttribute"/></xsl:attribute>
<xsl:attribute name="destination">preferredLocale</xsl:attribute>
</sldap:resultAttribute>
</sldap:resultObject>

</sldap:user>
```

Configuring people substitution:

This topic describes how to configure people substitution for Business Process Choreographer.

You have configured WebSphere security for Federated Repositories, and if you introduce custom people assignment criteria, you have also performed "Configuring the Virtual Member Manager people directory

provider" on page 473. You know whether you will use a file registry, property extension registry, or an existing Lightweight Directory Access Protocol (LDAP) schema to store the property extensions.

To use people substitution in a production environment, you must use the Virtual Member Manager (VMM) property extension repository as described in this topic. If however, you only want to use people substitution in a single-server test environment, you can use the file registry that is associated by default with federated repositories, without having to configure VMM.

1. Add the attributes, "isAbsent", "substitutes", "substitutionStartDate", and "substitutionEndDate" to the VMM definition for PersonAccount:

   a. Locate the `wimxmlextension.xml` file:
   - Linux   UNIX   *profile_root*/config/cells/*cell_name*/wim/model/wimxmlextension.xml
   - Windows   *profile_root*\config\cells*cell_name*\wim\model\wimxmlextension.xml

   b. Make a backup copy of the `wimxmlextension.xml` file.

   c. Edit the original copy of the `wimxmlextension.xml` file, and make sure that it contains the following definitions, which add the two attributes that are needed for user substitution to the PersonAccount entity type:

```
<wim:propertySchema nsURI="http://www.ibm.com/websphere/wim"
      dataType="STRING" multiValued="false" propertyName="isAbsent">
   <wim:applicableEntityTypeNames>PersonAccount
   </wim:applicableEntityTypeNames>
</wim:propertySchema>

<wim:propertySchema nsURI="http://www.ibm.com/websphere/wim"
      dataType="STRING" multiValued="true" propertyName="substitutes">
   <wim:applicableEntityTypeNames>PersonAccount
   </wim:applicableEntityTypeNames>
</wim:propertySchema>
<wim:propertySchema nsURI="http://www.ibm.com/websphere/wim"
      dataType="STRING" multiValued="false" propertyName="substitutionStartDate">
   <wim:applicableEntityTypeNames>PersonAccount
   </wim:applicableEntityTypeNames>
</wim:propertySchema>

<wim:propertySchema nsURI="http://www.ibm.com/websphere/wim"
      dataType="STRING" multiValued="false" propertyName="substitutionEndDate">
   <wim:applicableEntityTypeNames>PersonAccount
   </wim:applicableEntityTypeNames>
</wim:propertySchema>
```

   If you are using a file registry, `fileRegistry.xml`, skip to step 4 on page 482.

2. Set up the property extension repository. For more information about setting up a property extension repository, see Configuring a property extension repository in a federated repository configuration.

   a. Make sure that a database is available to store the property extensions.

   b. Make sure that the JDBC driver class is available on the server class path. Click **Environment** > **WebSphere variables** to check. If necessary, add the JDBC driver to the class path. For DB2, add `db2jcc.jar,db2jcc_license_cu.jar` and `db2jcc_license_cisuz.jar` to the server's class path, and click **Apply** > **Save**

   c. Configure a DB2 Universal JDBC driver provider and type-4 data source for VMM using the administrative console. Set the webSphereDefaultIsolationLevel custom property for the data source to the value **2**. For more information about changing the default isolation level, see Changing the default isolation level for non-CMP applications and describing how to do so using a new custom property webSphereDefaultIsolationLevel.

   d. Restart the server.

   e. Make a backup copy of the `wimlaproperties.xml` file.
   - Linux   UNIX   *install_root*/etc/wim/setup/wimlaproperties.xml

install_root\etc\wim\setup

f. Edit the original copy of the wimlaproperties.xml file, and add the following definitions:

```
<wimprop:property wimPropertyName="isAbsent" dataType="String"
    valueLength="128" multiValued="false">
  <wimprop:applicableEntityName>
  <wimprop:entityName>PersonAccount</wimprop:entityName>
  </wimprop:applicableEntityName>
</wimprop:property>

<wimprop:property wimPropertyName="substitutes" dataType="String"
    valueLength="128" multiValued="true">
  <wimprop:applicableEntityName>
  <wimprop:entityName>PersonAccount</wimprop:entityName>
  </wimprop:applicableEntityName>
</wimprop:property>
<wimprop:property wimPropertyName="substitutionStartDate" dataType="String"
    valueLength="128" multiValued="false">
  <wimprop:applicableEntityName>
  <wimprop:entityName>PersonAccount</wimprop:entityName>
  </wimprop:applicableEntityName>
</wimprop:property>

<wimprop:property wimPropertyName="substitutionEndDate" dataType="String"
    valueLength="128" multiValued="false">
  <wimprop:applicableEntityName>
  <wimprop:entityName>PersonAccount</wimprop:entityName>
  </wimprop:applicableEntityName>
</wimprop:property>
```

g. Make sure that the application server (or in a network deployment environment, the deployment manager) is running. Be aware not to use the -conntype NONE option for the **wsadmin** utility.

h. Use the VMM administrative task **setupIdMgrPropertyExtensionRepositoryTables** to create the substitution properties in the Property Extension Repository database. For more details, see Setting up an entry mapping repository, a property extension repository, or a custom registry database repository using wsadmin commands. For example, using a DB2 database on a Windows platform:

```
$AdminTask setupIdMgrPropertyExtensionRepositoryTables {
-reportSqlError true
-schemaLocation install_root\etc\wim\setup
-laPropXML  install_root\etc\wim\setup\wimlaproperties.xml
-databaseType db2
-dbURL jdbc:DB2://host:port/name
-dbDriver com.ibm.db2.jcc.DB2Driver
-dbAdminId userID
-dbAdminPassword password }
```

Where *host* is the host name of the database server, *port* is the service port for the DB2 instance, and *name* is the name of the database.

i. If you are using a Lightweight Directory Access Protocol (LDAP) user repository, locate the wimconfig.xml file.

- Linux   UNIX   *profile_root*/config/cells/*cellName*/wim/config/wimconfig.xml

- Windows   *profile_root*\config\cells*cellName*\wim\config\wimconfig.xml

Edit the file and add the following entries to exclude the substitution attributes from the LDAP repository:

```
<config:repositories xsi:type="config:LdapRepositoryType"
    adapterClassName="com.ibm.ws.wim.adapter.ldap.LdapAdapter"
    id="ldaprepo1" ...>
    ...
    <config:attributeConfiguration>
      <config:propertiesNotSupported name="isAbsent"/>
```

```
                    <config:propertiesNotSupported name="substitutes"/>
                    <config:propertiesNotSupported name="substitutionEndDate"/>
                    <config:propertiesNotSupported name="substitutionStartDate"/>
                </config:attributeConfiguration>
```

    j. Activate the extension property repository:

        1) Using the **setIdMgrPropertyExtensionRepository** command. For more details, see Setting up an entry mapping repository, a property extension repository, or a custom registry database repository using wsadmin commands. For example, using a DB2 database named VMMDB, a data source named VMMDS:

```
$AdminTask setIdMgrPropertyExtensionRepository {
-dataSourceName jdbc/VMMDS
-databaseType db2
-dbURL jdbc:DB2://host:port/VMMDB
-dbAdminId userID
 -dbAdminPassword password
 -JDBCDriverClass com.ibm.db2.jcc.DB2Driver
-entityRetrievalLimit 10 }
```

        2) Verify that the `wimconfig.xml` file contains an entry similar to the following:

```
<config:propertyExtensionRepository
    adapterClassName="com.ibm.ws.wim.lookaside.LookasideAdapter"
    id="LA"
    databaseType="db2"
    dataSourceName="jdbc/VMMDS"
    dbAdminId="userID"
    dbAdminPassword="{xor}PasswordXOR"
    dbURL="jdbc:DB2://host:port/VMMDB"
    entityRetrievalLimit="10"
    JDBCDriverClass="com.ibm.db2.jcc.DB2Driver"/>>
```

3. If you use an LDAP schema to hold the substitution information: It may or may not already have definitions for "isAbsent", "substitutes", "substitutionStartDate", and "substitutionEndDate" (possibly with different names). Whether you have existing definitions, or you will create new ones, make sure of the following:

    a. The LDAP directory must allow write operations.

    b. The attribute for absence information ("isAbsent") must be of type Boolean or a String.

    c. The attribute that defines who the person can substitute for ("substitutes") must be of type String, multi-valued, and permit a length up to 128 characters.

    d. If your existing or chosen attribute names are not "isAbsent", "substitutes", "substitutionStartDate", and "substitutionEndDate", you must define your attribute names in the administrative console by clicking either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, on the **Configuration** tab select **Custom properties** then set the desired names for the custom properties `Substitution.SubstitutesAttribute`, `Substitution.AbsenceAttribute`, `Substitution.StartDateAttribute`, and `Substitution.EndDateAttribute`.

4. Restart the server.

5. Enable substitution in the Human Task Manager:

    a. either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Human Task Manager**, and click **Human Task Manager**, then either **Runtime** or **Configuration**.

    b. To enable substitution, select **Enable substitution**.

    c. If non-administrators are allowed to perform substitution for other users, clear the **Restrict substitute management to administrators** option.

    Note: This settings does not affect the ability of users to change substitution for themselves.

d. Click **Apply**.

  e. If you selected **Configuration** in step 5a on page 482, restart the server to activate the substitution settings.

6. If you have problems with any of these steps, refer to the *Troubleshooting IBM Business Process Manager Advanced* PDF.

The people assignment service is configured to support user substitution for absent users.

Configuring Business Process Choreographer Explorer:

You can either run a script or use the administrative console to configure Business Process Choreographer Explorer.

You have configured Business Process Choreographer, and want to configure a Business Process Choreographer Explorer to work with it.

One or more of the following applies:
- You have not yet installed Business Process Choreographer Explorer.
- You want to manage an existing Business Process Choreographer configuration.
- You want to add another instance of Business Process Choreographer Explorer to an already managed Business Process Choreographer configuration.
- You want to configure the optional Business Process Choreographer Explorer reporting function, which was previously available as the Business Process Choreographer Observer.

  Note: The Business Process Choreographer Explorer reporting functionality is deprecated. To monitor and report on BPEL processes, use IBM Business Monitor.

To configure Business Process Choreographer Explorer, perform one of the following:

1. If you have not already done so, plan for the Business Process Choreographer Explorer by performing "Planning for the Business Process Choreographer Explorer and Business Process Archive Explorer" on page 110.

2. Configure a Business Process Choreographer Explorer instance by performing one of the following:
   - If you want to use the administrative console, perform "Using the administrative console to configure the Business Process Choreographer Explorer."
   - If you want to use a script, perform "Using the clientconfig.jacl script file to configure Business Process Choreographer Explorer or Business Process Archive Explorer" on page 484.

3. Optional: If you want to configure the reporting function, perform "Configuring the Business Process Choreographer Explorer reporting function and event collector" on page 488. After you have configured the reporting function infrastructure, other instances of the Business Process Choreographer Explorer or Business Process Archive Explorer can provide the reporting function by using the same reporting database data source.

4. Optional: Update your virtual host configuration. By default, the web modules of the Business Process Choreographer applications are configured for the **default_host** virtual host. Make sure that the ports associated with the host alias are correct. You might need to add host aliases for the host names and ports of additional cluster members or for the Web server that is used. For more details about virtual hosts, refer to Virtual hosts.

Business Process Choreographer Explorer is configured and ready to use.

Using the administrative console to configure the Business Process Choreographer Explorer:

You can use the administrative console to configure Business Process Choreographer Explorer and the optional Business Process Choreographer Explorer reporting function.

1. Click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Business Process Choreographer Explorer**.

2. To configure a new instance, click **Add**.

3. Enter values for the following fields:
   - If you want the new instance to start automatically at server start, select **Enable autostart**.
   - The **Context root** must be unique on the deployment target server or cluster.
   - **Explorer search result limit**.
   - **Managed Business Process Choreographer container**.
   - **Business Flow Manager REST API URL** , for standalone servers a default value is provided that points to the server's Web container.
   - **Human Task Manager REST API URL** , for standalone servers a default value is provided that points to the server's Web container.

4. Optional: If you want to configure the Business Process Choreographer Explorer reporting function perform the following.
   a. Ensure that a Business Process Choreographer event collector is installed and configured.
   b. Select **Enable reporting function**.
   c. Select which Business Process Choreographer event collector will be visualized. If the list is empty, you must first install and configure a Business Process Choreographer event collector, as described in "Configuring the Business Process Choreographer Explorer reporting function and event collector" on page 488.
   d. For **Report at snapshot range** specify how many days of data will be visualized.

5. Click **Apply**. Messages are displayed indicating the progress.

6. Optional: If any problems are reported, check the `SystemOut.log` file.

7. Start the enterprise application named `BPCExplorer_scope`. Where *scope* identifies the server or cluster where you configure the Business Process Choreographer Explorer.

Business Process Choreographer Explorer is configured and ready to use.

Using the clientconfig.jacl script file to configure Business Process Choreographer Explorer or Business Process Archive Explorer:

This describes how to configure a Business Process Choreographer Explorer or Business Process Archive Explorer and all the necessary resources on a server or cluster. You can also use the script to change configuration settings for an existing instance, including changing the maxListEntries and configuring the Business Process Choreographer Explorer reporting function.

You can either run this script interactively or in batch mode.

Purpose

This script can be used for several different purposes.
- To configure a Business Process Choreographer Explorer instance that connects to a particular Business Process Choreographer configuration, and works with the templates and instances in that configuration's runtime (BPEDB) database.
- To configure a Business Process Archive Explorer instance that connects to a particular Business Process Archive Manager configuration, and works with the completed instances in that configuration's archive (BPARCDB) database. This requires the same planning and parameters that are required for a Business Process Choreographer Explorer instance, except that the script is invoked with the **-operationMode ARCHIVE** option, the **-explorerHost** parameter has no effect, and the instance connects to a Business Process Archive Manager configuration.

- To change configuration settings for an instance of either type.
- To configure the reporting function for an instance of either type.

Location

The `clientconfig.jacl` script file is located in the Business Process Choreographer **config** directory:

- Linux   UNIX   *install_root*/ProcessChoreographer/config

- Windows   *install_root*\ProcessChoreographer\config

Running the script in a stand-alone server environment

The configuration script is run using the **wsadmin** command. In a stand-alone server environment:
- Include the **-conntype NONE** option only if the application server is not running.
- If WebSphere administrative security is enabled, and your user ID does not have configurator or administrator authority, include the wsadmin **-user** and **-password** options to specify a user ID that has configurator or administrator authority.
- If you are not working with the default profile, use the wsadmin **-profileName** *profile* option to specify the profile.

Running the script in a network deployment environment

The configuration script is run using the **wsadmin** command. In a network deployment environment:
- Run the script on the deployment manager node.
- Include the **-conntype NONE** option only if the deployment manager is not running.
- If WebSphere administrative security is enabled, and your user ID does not have configurator or administrator authority, include the wsadmin **-user** and **-password** options to specify a user ID that has configurator or administrator authority.
- If you are not working with the default profile, use the wsadmin **-profileName** *profile* option to specify the profile.

Configuring a Business Process Choreographer Explorer or Business Process Archive Explorer non-interactively

Change your current directory to *install_root* and enter the command:

- Linux   UNIX

  bin/wsadmin.sh -f ProcessChoreographer/config/clientconfig.jacl *parameters*

- Windows

  bin\wsadmin.bat -f ProcessChoreographer/config/clientconfig.jacl *parameters*

Where *parameters* are:

```
  ( [-node nodeName][-server serverName] | [-cluster clusterName] )
    [-operationMode { RUNTIME | ARCHIVE }]
    [-contextRootExplorer explorerContextRoot]
    [-explorerHost explorerURL]
    [-hostName explorerVirtualHostname]
    [-precompileJSPs { yes | no }]
  ( ( [-remoteNode nodeName][-remoteServer serverName] )
        | [-remoteCluster clusterName] )
    [-maxListEntries maximum]
    [-promptMode { ASK | USE_DEFAULT | FAIL_IF_MISSING }]
    [-reportAtSnapshotRange number]
    [-reportCreateTables { yes | no }]
    [-reportDataSource jndiName]
```

```
[-reportFunction { yes | no }]
[-reportSchemaName schemaName]
-restAPIBFM restAPIURL
-restAPIHTM restAPIURL
```

Note: If you run the script in batch mode, you must include all required parameters. If you run the script interactively, any required parameters that are not provided on the command line are prompted for.

Parameters

You can use the following parameters when invoking the script using wsadmin:

-cluster *clusterName*
Where *clusterName* is the name of the cluster where Business Process Choreographer Explorer or Business Process Archive Explorer will be configured. This parameter is optional. Do not specify this option in a standalone server environment, nor if you specify the node and server.

-contextRootExplorer *contextRootExplorer*
Where *contextRootExplorer* is the context root for the Business Process Choreographer Explorer or Business Process Archive Explorer. The context root must be unique within the WebSphere cell.
- The default value for the Business Process Choreographer Explorer is `/bpc`.
- The default value for the Business Process Archive Explorer is `/bpcarchive`.

-explorerHost *explorerURL*
If **-operationMode ARCHIVE** is specified, to create a Business Process Archive Explorer, this parameter is ignored. Otherwise, *explorerURL* defines the URL of the Business Process Choreographer Explorer. The URL is used to link the Human Task Manager of the managed Business Process Choreographer configuration to this particular Business Process Choreographer Explorer instance. In batch mode this parameter defaults to an empty string, which means that the link will not be made. You can make or change the link later using the administrative console.

-hostName *VirtualHostname*
Where *VirtualHostname* is the virtual host where the Business Process Choreographer Explorer or Business Process Archive Explorer will run. The default value is **default_host**.

-maxListEntries *maximum*
Where *maximum* is the maximum number of results that the Business Process Choreographer Explorer or Business Process Archive Explorer will return for a query. The default is 10000.

-node *nodeName*
Where *nodeName* is the name of the node where Business Process Choreographer Explorer or Business Process Archive Explorer will be configured. If you do not specify this parameter, the default is the local node.

-operationMode (RUNTIME | ARCHIVE)
This optional parameter controls whether a Business Process Choreographer Explorer configuration or a Business Process Archive Explorer configuration is created on the deployment target. The default is **RUNTIME**, which will create a Business Process Choreographer Explorer configuration.

-precompileJSPs { no | yes }
Determines whether Java Server Pages (JSPs) will be precompiled, or not. The default is no. Note that it is not possible to debug precompiled JSPs.

-remoteCluster *clusterName*
Use this parameter, if you do not want to connect to the local Business Process Choreographer or Business Process Archive Manager configuration and you do not specify remoteNode and remoteServer. If this parameter is not specified, it defaults to the value of the -cluster parameter.

-remoteNode *nodeName*

Use this parameter and remoteServer if you do not want to connect to the local Business Process Choreographer or Business Process Archive Manager. If this parameter is not specified, it defaults to the value of the -node parameter.

-remoteServer *serverName*

Use this parameter and remoteNode if you do not want to connect to the local Business Process Choreographer or Business Process Archive Manager configuration. If this parameter is not specified, it defaults to the value of the -server parameter.

-reportAtSnapshotRange *number*

A snapshot report is built by evaluating all events that are older than the qualifying snapshot date and time. This optional parameter defines the number of days for which events can be included in a snapshot report. Only events that have been emitted within this period are evaluated by the snapshot report. The default is 60 days. This optional parameter only has an effect if the reporting function is enabled using the option **-reportFunction yes**.

If this value is too high, a very large number of events might have to be processed, and generating a report can take a long time. Try setting this value to the maximum duration of a process instance in your business environment.

-reportCreateTables { yes | no}

This optional parameter indicates if the Business Process Choreographer Explorer reporting function schema is created when Business Process Choreographer Explorer connects to the database the first time. The default is **yes**. This optional parameter only has an effect if the reporting function is enabled using the option **-reportFunction yes**.

-reportDataSource *jndiName*

Where *jndiName* is the JNDI name of the data source JNDI that is used to connect to the database. Mandatory parameter when **-reportFunction yes** is specified. The data source is not created automatically.

-reportFunction { yes | no }

This optional parameter controls whether the reporting function is enabled when a Business Process Choreographer Explorer or Business Process Archive Explorer is being configured. It has no effect when the **-createExplorer no** option is specified. In interactive mode, the default is no. In batch mode, for compatibility with earlier versions, the default is yes.

-reportSchemaName *schemaName*

This optional parameter identifies the database schema that is used as a prefix for all reporting database objects. If you specify no schema name, a unique schema name is generated. This optional parameter only has an effect if the reporting function is enabled using the option **-reportFunction yes**. The default value is WPRBC00.

-restAPIBFM *restAPIURL*

Where *restAPIURL* is the URL for the Business Flow Manager REST API, which is needed to support the graphical process widget for the Business Process Choreographer Explorer or Business Process Archive Explorer. On a standalone server, the default is computed, for example, **http://***localhost***:9080/ rest/bpm/bfm**. In a network deployment environment there is no default value.

-restAPIHTM *restAPIURL*

Where *restAPIURL* is the URL for the Human Task Manager REST API, which is needed to support the graphical process widget for the Business Process Choreographer Explorer or Business Process Archive Explorer. On a standalone server, the default is computed, for example, **http://***localhost***:9080/ rest/bpm/htm**. In a network deployment environment there is no default value.

-server *serverName*

Where *serverName* is the name of the server where Business Process Choreographer Explorer or Business Process Archive Explorer will be configured. If you have only one node and exactly one server, this parameter is optional.

Log files

If you have problems creating the configuration using the clientconfig.jacl script file, check the following log files:
- `clientconfig.log`
- `wsadmin.traceout`

The `clientconfig.log` and `wsadmin.traceout` files can be found in the `logs` subdirectory for your profile:
- Linux   UNIX   *profile_root*/**logs**
- Windows   *profile_root***logs**

If you run the script in connected mode, also check the files **SystemOut.log** and **SystemErr.log** that can be found in the subdirectory of the **logs** directory that is named after the application server or deployment manager that the wsadmin scripting client connected to.

Configuring the Business Process Choreographer Explorer reporting function and event collector:

Using the Business Process Choreographer Explorer reporting function is optional and deprecated.

Before you can use it, you must setup the database and deploy the applications.

You have performed "Planning the Planning the Business Process Choreographer Explorer reporting function (deprecated)" on page 111, and "Configuring Business Process Choreographer Explorer" on page 483, but you did not configure the reporting function.

Note: The Business Process Choreographer Explorer reporting functionality is deprecated. To monitor and report on BPEL processes, use IBM Business Monitor.

You want to configure the Business Process Choreographer Explorer reporting function, with its own database.

1. If the database for the Business Process Choreographer Explorer reporting function does not already exist, perform "Preparing the reporting database."
2. Perform "Configuring the Business Process Choreographer event collector application" on page 513.
3. If you did not already enable the reporting function when you configured the Business Process Choreographer Explorer, perform Enabling the Business Process Choreographer Explorer reporting function.
4. Perform "Changing configuration parameters for the Business Process Choreographer Explorer reporting function" on page 518.
5. Perform Enabling logging for Business Process Choreographer .
6. Perform "Verifying the Business Process Choreographer Explorer reporting function" on page 523.

The Business Process Choreographer Explorer reporting function is configured and working.

You can use Business Process Choreographer Explorer reporting function to generate reports, as described in Reporting on BPEL processes and activities (deprecated). You can also use the reporting database created here to provide the same reporting function in a Business Process Archive Explorer instance.

Preparing the reporting database:

Perform the actions for your database.

Using SQL scripts to create the reporting database:

You might choose to create the database for the Business Process Choreographer Explorer reporting function manually before you configure Business Process Choreographer, or even before you have installed the product.

You have performed "Planning the reporting database" on page 103.

Your organization might require that databases be created by a separate database administrator. If you use the administrative console or the bpeconfig.jacl script to configure Business Process Choreographer, customized SQL scripts are generated that you can give to your DBA to create the BPEDB database. However, if you want to create the database before configuring Business Process Choreographer, or even before product installation, your DBA must use the non-customized SQL scripts. This topic describes how to use the non-customized SQL scripts, which are available on the product media.

On the server that hosts the database, create the database according to the description for your database system.
- "Using SQL scripts to prepare a DB2 Universal database for the Business Process Choreographer Explorer reporting function."
- "Using SQL scripts to prepare an Oracle database for the Business Process Choreographer Explorer reporting function" on page 501.

The database for the Business Process Choreographer Explorer reporting function exists.

Preparing a DB2 Universal database for the Business Process Choreographer Explorer reporting function:

You can either use scripts or an interactive tool to prepare the reporting database.

Using SQL scripts to prepare a DB2 Universal database for the Business Process Choreographer Explorer reporting function:

This describes how to use scripts to prepare a DB2 Universal database on Linux, UNIX, and Windows platforms.

Your reporting database must already exist. You can either use an existing database, or use a new one. To perform this task, you must have administration rights for the destination database.

1. If you configured Business Process Choreographer using the bpeconfig.jacl script in batch mode or using the administrative console, use the generated SQL script to create the database for the Business Process Choreographer Explorer reporting function.

   a. Locate the generated `createSchema_Observer.sql` SQL script.
      - If you configured Business Process Choreographer in a network deployment environment using the administrative console or by running the `bpeconfig.jacl` script in connected mode, the `createSchema_Observer.sql` script file is generated on the node of the deployment manager.
      - If you configured Business Process Choreographer on a standalone server using the administrative console or by running the `bpeconfig.jacl` script in connected mode, the `createSchema_Observer.sql` script file is generated on the node where you invoked **wsadmin**.
      - If you configured Business Process Choreographer by running the `bpeconfig.jacl` script in disconnected mode, the `createSchema_Observer.sql` script file is generated on the node of the standalone server.
      - Linux   UNIX
        - If you specified a schema qualifier, the generated script is: ***profile_root*/dbscripts/ ProcessChoreographer/DB2/*database_name*/*database_schema*/createSchema_Observer.sql**.

- If you did **not** specify a schema qualifier, the generated script is: ***profile_root*/dbscripts/ ProcessChoreographer/DB2/*database_name*/createSchema_Observer.sql**.

-

  - If you specified a schema qualifier, the generated script is: ***profile_root*\dbscripts\ ProcessChoreographer\DB2*database_name**database_schema*\createSchema_Observer.sql**

  - If you did **not** specify a schema qualifier, the generated script is: ***profile_root*\dbscripts\ ProcessChoreographer\DB2*database_name*\createSchema_Observer.sql**

  Where:

  database_name
  > is the name of your database.

  database_schema
  > is the name of the schema, if you are using one.

b. If the database is remote, copy the generated script to the database host. If you are not authorized to perform this, give your database administrator a copy of the script and discuss your requirements with her.

c. Optional: You or your database administrator can customize the SQL script. For example, to specify the allocation of disks and table spaces that you planned in "Planning the reporting database" on page 103.

d. Run the SQL script on the database host by entering the following command:

```
db2 -tf createSchema_Observer.sql
```

2. If you configured Business Process Choreographer using the bpeconfig.jacl script in interactive mode, or if you have not configured Business Process Choreographer yet, there are no generated SQL scripts; you must customize a copy of the standard SQL script.

a. Change to the Business Process Choreographer subdirectory where the configuration scripts for your database are located.

-

  - Location on the product media: *media_root* or *extract_directory*/dbscripts/ ProcessChoreographer/DB2

  - Location after installation:*install_root*/dbscripts/ProcessChoreographer/DB2

-

  - Location on the product media:*media_root* or *extract_directory*\dbscripts\ ProcessChoreographer\DB2

  - Location after installation:*install_root*\dbscripts\ProcessChoreographer\DB2

b. Copy all *Observer.sql script files to your database server.

c. On the database server, change to the directory where you copied the script files.

d. Create the table space:

1) Edit the **createTablespace_Observer.sql** script file according to the instruction at the top of the file.

2) Run the table space creation script file, enter the command:

```
db2 -tf createTablespace_Observer.sql
```

3) Make sure that the script output contains no errors. If errors occur, you can drop the table space using the **dropTablespace_Observer.sql** script file.

e. Create the schema (tables, indexes, and views).

1) Edit the **createSchema_Observer.sql** script file according to the instructions at the top of the file.

2) In the DB2 command-line processor, enter the command:

```
db2 -tf createSchema_Observer.sql
```

3) Make sure that the script output contains no errors. If you want to drop the schema, use the **dropSchema_Observer.sql** script file.

3. If you want to use the Java implementation instead of the SQL implementation of the Business Process Choreographer Explorer task history UDFs perform "Selecting between Java and SQL user-defined functions" on page 505.

4. Use the administrative console to create an XA data source that points to the database, and test the connection.

The database schema for the reporting database has been prepared.

Related concepts:

"User-defined functions for Business Process Choreographer Explorer reporting function" on page 505 With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

Related tasks:

"Selecting between Java and SQL user-defined functions" on page 505 Use the setupEventCollector tool or run scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the reporting database.

Using the setupEventCollector tool to prepare a DB2 Universal database for the Business Process Choreographer Explorer reporting function:

This describes how use an interactive menu-driven tool and the `createTablespace_Observer.sql` script to prepare the reporting database .

Your database must already exist.

1. If you use a type 2 JDBC connection:
   a. Prepare the command line environment:
      - `Linux` `UNIX` Run the `db2profile` for your DB2 instance.
      - `Windows` Open a DB2 command window.
   b. If your database is remote, catalog the database on a local DB2 instance.
2. Create the table space:
   a. Change to the Business Process Choreographer subdirectory where the SQL scripts for your database are located.
      - `Linux` `UNIX` *install_root*/dbscripts/ProcessChoreographer/DB2.
      - `Windows` *install_root*\dbscripts\ProcessChoreographer\DB2.
   b. Make a copy of the `createTablespace_Observer.sql` script file.
   c. Edit your copy of the `createTablespace_Observer.sql` script file according to the instruction at the top of the file.
   d. Connect to the database using a user ID that has SYSCTRL or SYSADM authority.
   e. Run the table space creation script file, enter the command:
      ```
      db2 -tf createTablespace_Observer.sql
      ```
   f. Make sure that the script output contains no errors. If errors occur, you can drop the table space using the `dropTablespace_Observer.sql` script file.
3. If you are using a user ID that is not a database administrator, make sure that it has the following permissions:
   ```
   GRANT CREATETAB, CONNECT, CREATE_EXTERNAL_ROUTINE ON DATABASE
         TO USER user_name;
   GRANT USE OF TABLESPACE tablespace_name TO USER user_name;
   ```

where *user_name* is the user ID, and *tablespace_name* is a list of all Business Process Choreographer Explorer reporting function table space names, as can be found in the script `createTablespace_Observer.sql`.

4. Change to the Business Process Choreographer directory where the configuration scripts are located.

   - Linux   UNIX *install_root*/ProcessChoreographer/config

   - Windows *install_root*\ProcessChoreographer\config

5. Start the tool to set up the event collector, as described in "setupEventCollector tool" on page 522.

6. Prepare the database:

   a. When you see:

   ```
   1) Prepare a database for the Event Collector and reporting function
   2) Install the Event Collector application
   3) Remove the Event Collector application and related objects
   4) Change configuration settings of an installed Event Collector
   5) Drop the database schema of the Event Collector and reporting function
   6) Administer reporting function related user-defined functions

   0) Exit Menu
   ```

   Select option 1 to prepare a database for the event collector and Business Process Choreographer Explorer reporting function.

   b. When you see:

   ```
   Prepare a database for the Event Collector and reporting function

   Select the type of your database provider:


       d) DB2 Universal
       z) DB2 on z/OS
       o) Oracle

       0) Exit Menu
   ```

   Enter **d** to select DB2 Universal.

   c. The tool allows you to create an SQL file that you can give to your database administrator to run, rather than running it with your current user ID. When you see:

   ```
   Do you want to create an SQL file only (delay database preparation)?
     y) yes
     n) no
   ```

   - If you do not want to delay running the SQL, enter n.
   - If you want to delay running the SQL, enter y. You will see:

     ```
     Even if you want to delay the configuration,
     your entered values can be checked within the database.
     Do you want to perform these checks?
       y) yes
       n) no
     ```

     – If you want the values that you enter to be checked within the database, enter y.

     – Otherwise enter n.

     Depending on what you entered, you might not see all of the following prompts. Skip any steps that you do not see.

   d. If you see:

   ```
   Specify the JDBC driver type to be used:

     2) Connect using type 2 (using a native database client)
     4) Connect using type 4 (directly via JDBC)
   ```

Specify the JDBC driver type:

- If you are using a native database client, enter 2 .
- Otherwise, enter 4 to select the type 4 JDBC driver.

e. If you see one of the following prompts:

```
Specify the name of your database:  [BPEDB]
Specify the name of database in local catalog:  [BPEDB]
```

Either the database name, or an alias.

Note: The default value, **BPEDB**, is the same database that is used by Business Process Choreographer. For a high-performance system, you should use a different database. If you use a different database, it must exist before you continue.

f. If you see:

```
Specify the hostname of the database server:  [localhost]
```

Enter the host name or IP address of your database server.

g. If you see:

```
Specify the port where the database server is listening:  [50000]
```

Enter the port number for your database server.

h.

```
Specify the directory of your JDBC driver:  [D:\opt\SQLLIB\java]
```

Enter the directory where the db2jcc.jar and db2jcc_license_cu.jar JAR files for the JDBC driver reside.

i. If you see:

```
Specify userid to connect to the database 'database_name' [db2admin] :
Specify the password for userid 'user_ID' :
```

Enter the user ID and password to connect to the database. The following is displayed:

```
 Trying to connect to database 'database_name', using user 'user_ID'
Connected to 'database_name'
```

j. If you see:

```
Specify the database schema to be used. [user_ID] :
```

Enter the database schema (the collection name) to be used for the database objects. If you enter a space character or leave the field empty, the schema of the user ID is used.

k. When you see:

```
Choose the implementation of the reporting function user-defined functions.

  Note: The Java UDFs are more precise, but they require a jar file
  installed to the database.
  Visit the reporting function documentation for details.

  1) Java
  2) SQL

0) Exit Menu
```

- If you want to use the more precise Java-based user-defined functions (UDFs), which requires that a JAR file is installed in the database, enter 1.
- If you want to use the less precise SQL-based UDFs, enter 2.

You see something similar to the following:

```
Checking for required tablespace(es) ['OBSVRTS']
All required tablespaces were found.
Loading the jar file 'install_root\lib\bpcodbutil.jar' into the database.
The jar file 'install_root\lib\bpcodbutil.jar' was successfully installed.

The setup of the database completed successfully.
```

7. Use the administrative console to create an XA data source that points to the database, and test the connection.

The database schema for the reporting database has been prepared.

Related concepts:

"User-defined functions for Business Process Choreographer Explorer reporting function" on page 505
With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

Related tasks:

"Selecting between Java and SQL user-defined functions" on page 505
Use the setupEventCollector tool or run scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the reporting database.

Preparing a DB2 for z/OS database for the Business Process Choreographer Explorer reporting function:

You can prepare the reporting database remotely or within the UNIX System Services.

Creating a DB2 for z/OS database for the Business Process Choreographer Explorer reporting function in USS:

This describes how use an interactive menu-driven tool, and the `createTablespace_Observer.sql` script in UNIX System Services (USS) on a z/OS system, to create a DB2 for z/OS database.This describes how use an interactive menu-driven tool, and the `createTablespace_Observer.sql` script in UNIX System Services (USS) to create a DB2 for z/OS database.

1. Prepare the DB2 environment:

    a. Log on to the native z/OS environment.

    b. If multiple DB2 systems are installed, decide which subsystem you want to use.

    c. Make a note of the IP port to which the DB2 subsystem is listening.

    d. Determine the location name of the subsystem. To find out the location name, either check on the DB2 Systems panel or select the DB2 administration menu option **Execute SQL statements** for your subsystem, and enter the following SQL query:

       `select current server from sysibm.sysdummy1`

    e. Create a storage group and note the name, for example OBSVRSG.

    f. If you want to use a new database, create a new database, for example, named OBSVRDB. If you want, you can reuse an existing database and storage group, for example, the Business Process Choreographer database, BPEDB.

    g. Decide which schema qualifier to use.

    h. Decide which user ID, *user_ID*, will be used to set up the database. This is not the user ID used to access the database at runtime.

    i. Ensure that the user ID has the following rights to access the database and storage group:

       • Permission to use the storage group.

       • Permission to use the database OBSVRDB.

       • Permission to create table spaces within the database OBSVRDB.

       • Permission to create tables within the database OBSVRDB.

j. If you intend to use the Java implementation of the Business Process Choreographer user-defined functions (UDFs), ensure that the user ID also has the following rights:
- Permission to perform a select on SYSIBM.SYSJAROBJECTS.
- Permission to execute the following stored procedures for the schema SQLJ:
    - INSTALL_JAR
    - REMOVE_JAR
    - REPLACE_JAR
    - DB2_INSTALL_JAR
    - DB2_REMOVE_JAR
    - DB2_REPLACE_JAR
- Permission to execute packages belonging to the collection DSNJAR.

k. If you intend to use the Java implementation of the Business Process Choreographer user-defined functions (UDFs), prepare the DB2 environment to run Java user defined functions and interpreted Java routines. Perform the following:

1) Enable the DB2-supplied stored procedures and define the tables used by the DB2 Universal JDBC Driver, as described in the DB2 documentation.
2) Set up the environment for interpreted Java routines, as described in the DB2 documentation.
3) Note the name of the WLM application environment created during this procedure.

2. Log on to the USS.
3. Create the table space:

a. Change to the directory where the Business Process Choreographer Explorer reporting function database scripts for your database system are located. *install_root*/dbscripts/ProcessChoreographer/DB2zOS

b. Edit the ASCII createTablespace_Observer.sql script. Replace @STOGRP@ with the storage group name and replace @DBNAME@ with the database name (not the subsystem name).

c. Make sure that you are connected to your database, and run your customized version of the script.
```
db2 -tf createTablespace_Observer.sql
```

4. Start the tool to set up the event collector, as described in "setupEventCollector tool" on page 522.

5. Prepare the database: When you see:
```
1) Prepare a database for the Event Collector and reporting function
2) Install the Event Collector application
3) Remove the Event Collector application and related objects
4) Change configuration settings of an installed Event Collector
5) Drop the database schema of the Event Collector and reporting function
6) Administer reporting function related user-defined functions

0) Exit Menu
```

a. Select option **1** to prepare a database for the event collector application.

b. When you see:
```
d) DB2 Universal

z) DB2 on z/OS
o) Oracle
```
Enter **z** to select DB2 on z/OS.

c. The tool allows you to create an SQL file that you can give to your database administrator to run, rather than running it with your current user ID. When you see:
```
Do you want to create an SQL file only (delay database preparation)?
  y) yes
  n) no
```
- If you do not want to delay running the SQL, enter n.

- If you want to delay running the SQL, enter y. You will see:

```
Even if you want to delay the configuration,
your entered values can be checked within the database.
Do you want to perform these checks?
  y) yes
  n) no
```

  – If you want the values that you enter to be checked within the database, enter y.

  – Otherwise enter n.

  Depending on what you entered, you might not see all of the following prompts. Skip any steps that you do not see.

d. If you see:

```
Specify the database location name:
  (as returned by SELECT CURRENT SERVER FROM SYSIBM.SYSDUMMY1):
```

  Enter the location name of your database. This is the value you noted in step 1d on page 494.

e. If you see:

```
Specify the name of the database as known by the susbsystem [subsystem]
```

  Enter the name that your database has in the subsystem on the z/OS host. This is the value you noted in step 1f on page 494.

f. If you see:

```
Specify the hostname of the z/OS DB2 database server: [localhost]
```

  Enter the host name of your database server.

g. If you see:

```
Specify the port where the database subsystem is listening:
```

  Enter the port number that is used by the database subsystem. This is the value you noted in step 1c on page 494.

h. If you see:

```
Specify userid to connect to the database 'database_alias' [db2admin] :
```

  Enter the user ID to connect to the database . This is the user ID, *user_ID*, described in step 1h on page 494.

i. If you see:

```
Specify the password for userid 'user_ID' :
```

  Enter the password for the user ID.

j. If you see:

```
Trying to connect to database 'database_alias', using user 'user_ID'
Connected to 'database_alias'
Specify the database schema to be used. [user_ID] :
```

  Enter the database schema to be used for the database objects, or press Enter to accept the default, which is the user ID that is used to connect to the database. This is the schema qualifier.

k. If you see:

```
Note: The Java UDFs are more precise, but they require a jar file
installed to the database.
Visit the reporting function documentation for details.

  1) Java
  2) SQL

  0) Exit Menu
```

- If you want to use the more precise Java-based user-defined functions (UDFs), which requires that a JAR file is installed in the database, enter 1.
- If you want to use the less precise SQL-based UDFs, enter 2.

l. If you see:

```
Specify the DB2 storage group name to be used. [OBSVRSG] :
```

Enter the storage group name from step 1e on page 494, or press Enter to accept the default value.

m. If you see:

```
Specify the WLM environment name where the UDF should run. [] :
```

Enter the WLM environment that you noted in step 1k on page 495.

n. After checking for the required table spaces and loading a JAR file into the database, success is indicated by the following:

```
The setup of the database completed successfully.
```

6. Using the administrative console, create an XA data source that points to the database.

The database schema for the reporting database has been prepared.

Related concepts:

"User-defined functions for Business Process Choreographer Explorer reporting function" on page 505
With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

Related tasks:

"Selecting between Java and SQL user-defined functions" on page 505
Use the setupEventCollector tool or run scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the reporting database.

Creating a DB2 for z/OS database for the Business Process Choreographer Explorer reporting function from a remote system:

This describes how use an interactive menu-driven tool, and the `createTablespace_Observer.sql` script on a Linux, UNIX, or Windows system to prepare the schema for the reporting database.

You must have already installed Process Server on a Linux, UNIX, or Windows server.

1. On the z/OS server that hosts the database:
   a. Log on to the native z/OS environment.
   b. If multiple DB2 systems are installed, decide which subsystem you want to use.
   c. Make a note of the IP port to which the DB2 subsystem is listening.
   d. Create a storage group and note the name, for example OBSVRSG.
   e. If you want to use a new database, create a new database, for example, named OBSVRDB. If you want, you can reuse an existing database and storage group, for example, the Business Process Choreographer database, BPEDB.
   f. Decide which schema qualifier to use.
   g. Decide which user ID, *user_ID*, will be used to set up the database. This is not the user ID used to access the database at runtime.
   h. Ensure that the user ID has the following rights to access the database and storage group:
      - Permission to use the storage group.
      - Permission to use the database OBSVRDB.
      - Permission to create table spaces within the database OBSVRDB.

- Permission to create tables within the database OBSVRDB.

i. If you intend to use the Java implementation of the Business Process Choreographer user-defined functions (UDFs), ensure that the user ID also has the following rights:

- Permission to perform a select on SYSIBM.SYSJAROBJECTS.
- Permission to execute the following stored procedures for the schema SQLJ:
  - INSTALL_JAR
  - REMOVE_JAR
  - REPLACE_JAR
  - DB2_INSTALL_JAR
  - DB2_REMOVE_JAR
  - DB2_REPLACE_JAR
- Permission to execute packages belonging to the collection DSNJAR.

j. If you intend to use the Java implementation of the Business Process Choreographer user-defined functions (UDFs), prepare the DB2 environment to run Java user defined functions and interpreted Java routines. Perform the following:

1) Enable the DB2-supplied stored procedures and define the tables used by the DB2 Universal JDBC Driver, as described in the DB2 documentation.
2) Set up the environment for interpreted Java routines, as described in the DB2 documentation.
3) Note the name of the WLM application environment created during this procedure.

2. On the server that hosts the Process Server:

a. Install a suitable DB2 client.

Note: If you plan to use a native DB2 client to connect to the remote database (using a type 2 JDBC connection) make sure that you have DB2 Connect Gateway installed. DB2 Connect Gateway is part of the DB2 UDB ESE package, but you can also install it separately.

b. If you are using a native DB2 client, catalog the remote database and verify that you can establish a connection to it. Enter the following commands in a DB2 command line window:

```
catalog tcpip node zosnode remote host_name server IP_port ostype mvs
catalog database location as database_alias at node zosnode
        authentication dcs
catalog dcs database database_alias parms ',,INTERRUPT_ENABLED'
```

where

zosnode
> is a local alias for the remote z/OS node.

host_name
> is either the TCP/IP address or alias of the remote z/OS system.

IP_port
> is the port number where the DB2 subsystem is listening.

database_alias
> is the local alias to access the remote database.

location
> is the remote DB2 location name. To find out the location name, log on to TSO and enter the following SQL query on the selected subsystem using one of the available query tools.
>
> ```
> select current server from sysibm.sysdummy1
> ```

To verify that you can connect to the remote system, enter:

```
db2 connect to database_alias user userid using password
```

c. Change to the directory where the Business Process Choreographer Explorer reporting function scripts are located:

- **Windows** `install_root\dbscripts\ProcessChoreographer\DB2zOS`

- **Linux** **UNIX** `install_root/dbscripts/ProcessChoreographer/DB2zOS`

d. Edit the ASCII `createTablespace_Observer.sql` script. Replace @STOGRP@ with the storage group name and replace @DBNAME@ with the database name (not the subsystem name).

e. Run your customized version of the script.

```
db2 -tf createTablespace_Observer.sql
```

If you want to drop the table space, use the `dropTablespace_Observer.sql` script.

f. Change to the Business Process Choreographer subdirectory where the configuration scripts are located.

- **Linux** **UNIX** `install_root/ProcessChoreographer/config`

- **Windows** `install_root\ProcessChoreographer\config`

g. Start the tool to set up the event collector, as described in "setupEventCollector tool" on page 522.

h. Select option **1** to prepare a database for the event collector application.

i. When you see:

```
d) DB2 Universal

z) DB2 on z/OS
o) Oracle
```

Enter **z** to select DB2 on z/OS.

j. The tool allows you to create an SQL file that you can give to your database administrator to run, rather than running it with your current user ID. When you see:

```
Do you want to create an SQL file only (delay database preparation)?
  y) yes
  n) no
```

- If you do not want to delay running the SQL, enter n.

- If you want to delay running the SQL, enter y. You will see:

```
Even if you want to delay the configuration,
your entered values can be checked within the database.
Do you want to perform these checks?
  y) yes
  n) no
```

  – If you want the values that you enter to be checked within the database, enter y.

  – Otherwise enter n.

  Depending on what you entered, you might not see all of the following prompts. Skip any steps that you do not see.

k. If you see:

```
Specify the JDBC driver type to be used:

  2) Connect using type 2 (using a native database client)
  4) Connect using type 4 (directly via JDBC)
```

Specify the JDBC driver type:

- If you are using a native database client, enter 2 .

- Otherwise, enter 4 to select the type 4 JDBC driver.

l. If you see:

```
Specify the name of database in local catalog:  [BPEDB]
```

Enter the name of your database as it is cataloged on the local DB2 client, this is the value that you used for *database_alias* in step 2b on page 498.

m. If you see:

```
Specify the location name/connection target: []
```

Enter the location name of the subsystem to connect to.

Note: To determine the location name, log on with a SQL processor and execute the following SQL statement:

```
SELECT CURRENT SERVER FROM SYSIBM.SYSDUMMY1
```

n. If you see:

```
Specify the name of the database as known by the subsystem: [OBSVRDB]
```

Enter the name by which the database is known within the subsystem on the z/OS host.

o. If you see:

```
Specify the hostname of the database server:  [localhost]
Specify the port where the database server is listening:  [446]
```

Enter the host name and port number used by your z/OS database server.

p. If you see:

```
Specify the directory of your JDBC driver:  []
```

Enter the directory where the db2jcc.jar and db2jcc_license_cisuz.jar JAR files for the DB2 JDBC driver reside.

q. If you see:

```
Specify userid to connect to the database 'database_name' [db2admin] :
Specify the password for userid 'user_ID' :
```

Enter the user ID and password to connect to the database. This is the user ID, *user_ID*, described in step 1g on page 497.

r. If you see:

```
Specify the database schema to be used. [user_ID] :
```

Enter the name of the database schema to use for the database objects.

s. If you see:

```
Note: The Java UDFs are more precise, but they require a jar file
installed to the database.
Visit the reporting function documentation for details.

  1) Java
  2) SQL

  0) Exit Menu
```

- If you want to use the more precise Java-based user-defined functions (UDFs), which requires that a JAR file is installed in the database, enter 1.
- If you want to use the less precise SQL-based UDFs, enter 2.

t. If you see:

```
Specify the DB2 storage group name to be used. [OBSVRSG] :
```

Enter the storage group name from step 1d on page 497.

u. If you see:

```
Specify the WLM environment name where the UDF should run. [] :
```

Enter the WLM environment that you noted in step 1j on page 498. After checking for the required table spaces and loading a JAR file into the database, success is indicated by the following:

`The setup of the database completed successfully.`

3. Using the administrative console, create an XA data source that points to the database.

The database schema for the reporting database has been prepared.

Related concepts:

"User-defined functions for Business Process Choreographer Explorer reporting function" on page 505
With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

Related tasks:

"Selecting between Java and SQL user-defined functions" on page 505
Use the setupEventCollector tool or run scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the reporting database.

Preparing an Oracle database for the Business Process Choreographer Explorer reporting function:

You can either use scripts or an interactive tool to prepare the reporting database.

Using SQL scripts to prepare an Oracle database for the Business Process Choreographer Explorer reporting function:

This describes how to use scripts to prepare the reporting database.

Your reporting database must already exist. You can either use an existing database, or create a new one according to the database documentation.

1. If you configured Business Process Choreographer using the bpeconfig.jacl script in batch mode or using the administrative console, use the generated SQL script to create the database for the Business Process Choreographer Explorer reporting function.

   a. Locate the generated SQL file.

      - **Linux**   **UNIX**

         – If you specified a schema qualifier, the generated script is: *profile_root*/**dbscripts/ProcessChoreographer/Oracle/***database_name*/*database_schema*/**createSchema_Observer.sql**.
         – If you did **not** specify a schema qualifier, the generated script is: *profile_root*/**dbscripts/ProcessChoreographer/Oracle/***database_name*/**createSchema_Observer.sql**.

      - **Windows**

         – If you specified a schema qualifier, the generated script is: *profile_root***dbscripts\ProcessChoreographer\Oracle***database_name**database_schema***createSchema_Observer.sql**
         – If you did **not** specify a schema qualifier, the generated script is: *profile_root***dbscripts\ProcessChoreographer\Oracle***database_name***createSchema_Observer.sql**

   b. Copy the generated script `createSchema_Observer.sql` to your database server.

   c. Run the **createSchema_Observer.sql** script file, by entering the following command:

      ```
      sqlplus userID/password
         @database_name@createSchema_Observer.sql
      ```

2. If you configured Business Process Choreographer using the bpeconfig.jacl script in interactive mode, or if you have not configured Business Process Choreographer yet, there are no generated SQL scripts; you must customize a copy of the standard SQL script.

   a. Change to the Business Process Choreographer subdirectory where the configuration scripts for your database are located.

-
  - Location on the product media: *media_root* or *extract_directory*/dbscripts/ ProcessChoreographer/Oracle
  - Location after installation:*install_root*/dbscripts/ProcessChoreographer/Oracle

-
  - Location on the product media:*media_root* or *extract_directory*\dbscripts\ ProcessChoreographer\Oracle
  - Location after installation:*install_root*\dbscripts\ProcessChoreographer\Oracle

  b. Copy all *Observer.sql script files to your database server.
  c. Create the table space
   1) Edit your copy of the **createTablespace_Observer.sql** script file according to the instruction at the top of the file.
   2) Run your copy of the **createTablespace_Observer.sql** script file, by entering the following command:

   ```
   sqlplus userID/password
       @database_name@createTablespace_Observer.sql
   ```

   3) Make sure that the script output contains no errors. If errors occur, you can drop the table space using the **dropTablespace_Observer.sql** script file.
  d. Create the schema (tables, indexes, and views).
   1) Edit your copy of the **createSchema_Observer.sql** script file according to the instruction at the top of the file.
   2) Run your copy of the **createSchema_Observer.sql** script file, by entering the following command:

   ```
   sqlplus userID/password
       @database_name@createSchema_Observer.sql
   ```

   3) Make sure that the script output contains no errors. If you want to drop the schema, use the **dropSchema_Observer.sql** script file.
3. If you want to use the Java-based Business Process Choreographer user-defined functions:
  a. Copy the JAR file **bpcodbutil.jar**, from the **lib** subdirectory of the *install_root* directory to the directory that contains the SQL script file.
  b. Install the JAR file that contains UDFs for Business Process Choreographer.
   1) Log on to your database server as a user with Oracle administration rights, and change to the directory where the JAR file **bpcodbutil.jar** is located:
      - If your database is on the same system as the application server, change to the **lib** subdirectory of the *install_root* directory.
      - If your database is not on the same server as your application server, change to the directory where you copied the JAR file **bpcodbutil.jar** .
   2) Run the Oracle **loadjava** utility to install the JAR file **bpcodbutil.jar**, by entering the following command:

   ```
   loadjava -user user/password@database
       -schema  schema_name
       -resolve bpcodbutil.jar
   ```

   where:

   user, *password*, and *database* are valid values for user ID, password, and the database name.

   schema_name is the schema name under which the classes are to be stored. This must be the same schema as the one that is used for the event collector database tables.
   3) In case of problems, you can drop the JAR file using the command:

   ```
   dropjava -user user/password@database
       -schema  schema_name bpcodbutil.jar
   ```

.

4. Use the administrative console to create an XA data source that points to the database, and test the connection.

The database schema for the reporting database has been prepared.

Related concepts:

"User-defined functions for Business Process Choreographer Explorer reporting function" on page 505
With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

Related tasks:

"Selecting between Java and SQL user-defined functions" on page 505
Use the setupEventCollector tool or run scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the reporting database.

Using the setupEventCollector tool to prepare an Oracle database for the Business Process Choreographer Explorer reporting function:

This describes how use an interactive menu-driven tool, and the `createTablespace_Observer.sql` script to prepare the reporting database.

Your database must already exist. You can either use an existing database, or create a new one according to the database documentation.

1. `Linux` `UNIX` Add `$ORACLE_HOME/bin` to the PATH variable.
2. Create the table space:
   a. Change to the Business Process Choreographer subdirectory where the standard configuration scripts for your database are located.
      - `Linux` `UNIX` `install_root/dbscripts/ProcessChoreographer/Oracle`.
      - `Windows` `install_root\dbscripts\ProcessChoreographer\Oracle`.
   b. Edit a copy of the `createTablespace_Observer.sql` script file according to the instruction at the top of the file.
   c. Run the table space creation script file according to the instructions at the top of the file.
   d. Make sure that the script output contains no errors. If errors occur, you can drop the table space using the `dropTablespace_Observer.sql` script file.
3. Change to the Business Process Choreographer directory where the configuration scripts are located.
   - `Linux` `UNIX` `install_root/ProcessChoreographer/config`
   - `Windows` `install_root\ProcessChoreographer\config`
4. Start the tool to set up the event collector, as described in "setupEventCollector tool" on page 522.
5. Prepare the database: When you see:

```
1) Prepare a database for the Event Collector and reporting function
2) Install the Event Collector application
3) Remove the Event Collector application and related objects
4) Change configuration settings of an installed Event Collector
5) Drop the database schema of the Event Collector and reporting function
6) Administer reporting function related user-defined functions

0) Exit Menu
```

Perform the following:

a. Select option **1** to prepare a database for the event collector and Business Process Choreographer Explorer reporting function. The following menu is displayed:

```
Prepare a database for the Event Collector and reporting function

Select the type of your database provider:


        d) DB2 Universal
        z) DB2 on z/OS
        o) Oracle

        0) Exit Menu
```

b. Enter **o** to select Oracle.

c. The tool allows you to create an SQL file that you can give to your database administrator to run, rather than running it with your current user ID. When you see:

```
Do you want to create an SQL file only (delay database preparation)?
  y) yes
  n) no
```

- If you do not want to delay running the SQL, enter n.

- If you want to delay running the SQL, enter y. You will see:

```
Even if you want to delay the configuration,
your entered values can be checked within the database.
Do you want to perform these checks?
  y) yes
  n) no
```

  – If you want the values that you enter to be checked within the database, enter y.

  – Otherwise enter n.

  Depending on what you entered, you might not see all of the following prompts. Skip any steps that you do not see.

d. If you see:

```
Specify the database to be used.

Note: Database must already exist.

Specify the name of your database [BPEDB] :
```

Enter the SID name of the database.

e. If you see:

```
Specify the hostname where the oracle database resides: [localhost]
```

Enter the host name or IP address of the database server.

f. If you see:

```
Specify the port where the oracle listener is listening: [1521]
```

Enter the port number for the Oracle listener.

g. If you see:

```
Specify userid to connect to the database 'database_name' [system] :
```

Enter the user ID to connect to the database. The default is **system**.

h. If you see:

```
Specify the password for userid 'user_ID' :
```

Enter the password for the user ID.

i. When you see:

```
Choose the implementation of the reporting function user-defined functions.

  Note: The Java UDFs are more precise, but they require a jar file
  installed to the database.
  Visit the reporting function documentation for details.

  1) Java
  2) SQL

0) Exit Menu
```
- If you want to use the more precise Java-based user-defined functions (UDFs), which requires that a JAR file is installed in the database, enter 1.
- If you want to use the less precise SQL-based UDFs, enter 2.

You see something similar to the following:

```
Trying to connect to database 'database_name', using user 'user_ID'
Connected to 'database_name'
Checking for required tablespace(es) ['OBSVRTS', 'OBSVRLOB', 'OBSVRIDX']
All required tablespaces were found.
Loading the jar file 'install_root\lib\bpcodbutil.jar' into the database.
The jar file 'install_root\lib\bpcodbutil.jar' was successfully installed.

The setup of the database completed successfully.
```

6. Using the administrative console, create an XA data source that points to the database.

The database schema for the reporting database has been prepared.

Related concepts:

"User-defined functions for Business Process Choreographer Explorer reporting function"
With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

Related tasks:

"Selecting between Java and SQL user-defined functions"
Use the setupEventCollector tool or run scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the reporting database.

Selecting between Java and SQL user-defined functions:

Use the setupEventCollector tool or run scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the reporting database.

Related concepts:

"User-defined functions for Business Process Choreographer Explorer reporting function"
With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

User-defined functions for Business Process Choreographer Explorer reporting function:

With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

UDFs can be installed in either of the following implementations:

The SQL implementation

Use the SQL implementation for UDFs that are implemented in plain SQL, using the built-in time functions that are provided by the database system.

Installing the SQL implementation is easier than installing the Java implementation because the SQL implementation requires to run provided SQL scripts only. For these scripts, less administration rights are required to install them. In addition, the SQL implementation has a higher performance than the Java implementation. However, because of limitations of the build-in time functions SQL implemented UDFs might not be precise enough for your needs. For example, on DB2, the build-in time function assumes that each month has the length of 30 days, which might falsify your results.

The Java implementation

Use the Java implementation for UDFs that are implemented using the Java language.

To install the Java implementation, use the mechanisms provided by the database system. Java implemented UDFs grant precise reports. However, installing the Java implementation requires more steps then installing the SQL implementation, and it requires more administration rights on the database. For example, on DB2 z/OS databases, a work load manager (WLM) environment has to be set up to run the UDFs.

Depending on which way you choose to setup your database, the default implementation varies:

- If you set up your database to use SQL scripts, or to use the create tables on first touch feature, the SQL implementation is installed by default.
- If you set up your database to use the setupEventCollector tool, or to use the Business Process Choreographer sample configuration in the Profile creation wizard, the Java implementation is installed by default.

The implementation of the UDFs can be changed after the initial setup. This is described in "Selecting between Java and SQL user-defined functions" on page 505.

Related tasks:

"Selecting between Java and SQL user-defined functions" on page 505
Use the setupEventCollector tool or run scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the reporting database.

"Creating a DB2 for z/OS database for the Business Process Choreographer Explorer reporting function in USS" on page 494
This describes how use an interactive menu-driven tool, and the `createTablespace_Observer.sql` script in UNIX System Services (USS) on a z/OS system, to create a DB2 for z/OS database.This describes how use an interactive menu-driven tool, and the `createTablespace_Observer.sql` script in UNIX System Services (USS) to create a DB2 for z/OS database.

"Creating a DB2 for z/OS database for the Business Process Choreographer Explorer reporting function from a remote system" on page 497
This describes how use an interactive menu-driven tool, and the `createTablespace_Observer.sql` script on a Linux, UNIX, or Windows system to prepare the schema for the reporting database.

"Using SQL scripts to prepare an Oracle database for the Business Process Choreographer Explorer reporting function" on page 501
This describes how to use scripts to prepare the reporting database.

"Using the setupEventCollector tool to prepare an Oracle database for the Business Process Choreographer Explorer reporting function" on page 503
This describes how use an interactive menu-driven tool, and the `createTablespace_Observer.sql` script to prepare the reporting database.

"Using SQL scripts to prepare a DB2 Universal database for the Business Process Choreographer Explorer reporting function" on page 489
This describes how to use scripts to prepare a DB2 Universal database on Linux, UNIX, and Windows platforms.

"Using the setupEventCollector tool to prepare a DB2 Universal database for the Business Process Choreographer Explorer reporting function" on page 491
This describes how use an interactive menu-driven tool and the `createTablespace_Observer.sql` script to prepare the reporting database .

Related reference:

"setupEventCollector tool" on page 522
Use setupEventCollector to interactively configure or remove the Business Process Choreographer event collector application, to setup the database, and to administer user-defined functions for the database. This tool uses wsadmin scripting. You must configure an event collector if you want to use the Business Process Choreographer Explorer reporting function.

Using scripts to select between Java and SQL user-defined functions:

This describes how to use scripts to switch between the Java-based and SQL-based user-defined functions (UDFs) in the Business Process Choreographer reporting database.

Using scripts to select Java user-defined functions:

This describes how to use scripts to switch to the Java-based user-defined functions (UDFs) in the Business Process Choreographer reporting database.

You want to use the Java implementation of the UDFs instead of the SQL implementation.

1. Copy the jar file **bpcodbutil.jar**, to the same directory on your database server.

   - Linux UNIX *install_root*/lib

   - Windows *install_root*\lib

2. Connect to the database.

Option	Description
DB2	If you are not already connected to the database, connect to it by entering the following command in a DB2 command-line processor: `db2 connect to database_name`
Oracle	Start the SQLPLUS command processor and connect to the database by entering the following command: `sqlplus user@database_name`

3. Install the jar file **bpcodbutil.jar**.

Option	Description

DB2	Enter the command:
	
	`db2 call sqlj.install_jar(`
	`    'file:pathURL',`
	`    'schema.BPCODBUTIL')`
	
	where *pathURL* is a fully qualified URL to the jar file, and *schema* is the name of the schema for the Business Process Choreographer database. For example:
	
	• `Linux` `UNIX` If the JAR file is in the directory /tmp, you must enter the command:
	
	`db2 call sqlj.install_jar(`
	`    'file:/tmp/bpcodbutil.jar',`
	`    'schema.BPCODBUTIL')`
	
	• `Windows` If the JAR file is in the directory c:\tmp, you must enter the command:
	
	`db2 call sqlj.install_jar(`
	`    'file:c:/tmp/bpcodbutil.jar',`
	`    'schema.BPCODBUTIL')`

Oracle	1. Change to the directory where you copied the JAR file to.
	
	2. Enter the following command:
	
	`loadjava -user user_id/password`
	`        @localhost:port:database_name`
	`        -resolve bpcodbutil.jar -thin`
	`        -schema schema`
	
	Where *user_id* is a user ID with permission to install a JAR file, *password* is the password for the user ID, *port* is the port number of the SID listener, *database_name* is the name of the database, and *schema* is the name of the schema of the reporting tables, where the JAR file will be installed.

4. Edit the `dropFunctions_Observer.sql` script file according to the instruction at the top of the file. The script is located in the following directories:

   • `Linux` `UNIX` *install_root*/dbscripts/ProcessChoreographer/*database_type*

   • `Windows` *install_root*\dbscripts\ProcessChoreographer*database_type*

5. Drop the SQL implementation of the UDFs.

Option	Description
DB2	In a DB2 command-line processor, enter the command: `db2 -tf dropFunctions_Observer.sql`
Oracle	In the SQLPLUS command processor, enter the command: `@ `*`path`*`/dropFunctions_Observer.sql` Where *path* is the fully qualified path.

6. Edit the `createFunctionsJava_Observer.sql` script file according to the instruction at the top of the file. The script is located in the following directories:

   - Linux   UNIX   *install_root*/dbscripts/ProcessChoreographer/*database_type*

   - Windows   *install_root*\dbscripts\ProcessChoreographer*database_type*

7. Run the script to create the Java implementation of the UDFs.

Option	Description
DB2	In a DB2 command-line processor, enter the command: `db2 -tf createFunctionsJava_Observer.sql`
Oracle	In the SQLPLUS command processor, enter the command: `@ `*`path`*`/createFunctionsJava_Observer.sql` Where *path* is the fully qualified path.

The UDF implementation used has been switched to use Java.

Using scripts to select SQL user-defined functions:

This describes how to use scripts to switch to the SQL-based user-defined functions (UDFs) in the Business Process Choreographer reporting database.

You want to use the SQL implementation of the UDFs instead of the Java implementation.

1. Edit the `dropFunctions_Observer.sql` script file according to the instruction at the top of the file. The script is located in the following directories:

   - Linux   UNIX   *install_root*/dbscripts/ProcessChoreographer/*database_type*

   - Windows   *install_root*\dbscripts\ProcessChoreographer*database_type*

2. Connect to the database.

Option	Description
DB2	If you are not already connected to the database, connect to it by entering the following command in a DB2 command-line processor: `db2 connect to `*`database_name`*
Oracle	Start the SQLPLUS command processor and connect to the database by entering the following command: `sqlplus `*`user@database_name`*

3. Run the script to drop the Java implementation of the UDFs.

Option	Description
DB2	In a DB2 command-line processor, enter the command: `db2 -tf dropFunctions_Observer.sql`
Oracle	In the SQLPLUS command processor, enter the command: `@ path/dropFunctions_Observer.sql` Where *path* is the fully qualified path.

4. Edit the `createFunctionsSql_Observer.sql` script file according to the instruction at the top of the file.
5. Run the script to create the SQL implementation of the UDFs.

Option	Description
DB2	`db2 -tf createFunctionsSql_Observer.sql`
Oracle	`@ path/createFunctionsSql_Observer.sql` Where *path* is the fully qualified path.

6. Optional: Remove the JAR file from the database. Enter the command for your database.

Option	Description

DB2	`db2 call sqlj.remove_jar(`
	`    'schema.BPCODBUTIL')`
	
	Where *schema* is the name of the schema under which the JAR file was installed.

Oracle	`dropjava -user user_id/password`
	`            @localhost:port:database_name`
	`            -resolve bpcodbutil.jar -thin`
	`            -schema schema`
	
	Where *user_id* is a user ID with permission to install a JAR file, *password* is the password for the user ID, *port* is the port number of the SID listener, *database_name* is the name of the database, and *schema* is the name of the schema under which the JAR file was installed.

The UDF implementation used has been switched to use SQL.

Using the setupEventCollector tool to select between Java and SQL user-defined functions:

This describes how use an interactive menu-driven tool to switch between the Java-based and SQL-based user-defined functions (UDFs) in the Business Process Choreographer reporting database.

By default, setupEventCollector uses Java-based UDFs, but you can use the tool to switch to SQL-based UDFs. If you change your mind again, you can use the tool to switch back to using Java-based UDFs.

1. Start the tool to set up the event collector, as described in "setupEventCollector tool" on page 522. You see the following menu:

```
1) Prepare a database for the Event Collector and reporting function
2) Install the Event Collector application
3) Remove the Event Collector application and related objects
4) Change configuration settings of an installed Event Collector
```

```
   5) Drop the database schema of the Event Collector and reporting function
   6) Administer reporting function related user-defined functions

   0) Exit Menu
```

2. Select option 6 to administer the user-defined functions for the Business Process Choreographer
   Explorer reporting function. You will see the following menu:
   ```
   d) DB2 Universal
   8) DB2 V8/V9 on z/OS
   o) Oracle
   ```

3. If you are using either DB2 for Linux, UNIX, or Windows, or DB2 for z/OS, select the option for your
   database version: d, or 8

   a. When you see the following menu:
      ```
      Specify which type should be used to connect to the Database:

         2) Connect using type 2 (using a native DB2 client)
         4) Connect using type 4 (directly via JDBC)
      ```

      Select one of the following options:

      2   For a type-2 JDBC connection, which uses a native DB2 client. In this case, you are
      prompted to enter the following:

      Database name

      Database user ID

      Password

      Directory of your JDBC driver

      4   For a type-4 JDBC driver, which connects directly. In this case, you are prompted to enter
      the following:

      Database name

      Database server host name

      Database server port number

      Directory of your JDBC driver

      Database user ID

      Password

4. If you are using Oracle, select option o.

   a. Enter the following connection information:

      Database server host name

      Database server port number

      Database name

      Database user ID

      Password

      Directory of your JDBC driver

5. If a connection can be established to the database, you will see the menu for administering the UDFs
   for the database:
   ```
   6) Administer reporting function related user-defined functions

      1) Activate Java based user-defined functions
   ```

```
   2) Activate SQL based user-defined functions
   3) Determine current state
   4) List, install or remove the jar file containing the java based functions
```

a. If you want to activate the Java-based UDFs, select option 1.

    1) When you see:

```
Specify the database schema to be used:
```

    Enter the name of the database schema.

    2) When you see:

```
WARNING: Switching the UDF implementation type may break any
running reporting function applications. Continue anyway?
y) yes
n) no
Your selection:
```

    If an important report is running, either enter n to not continue the switch or wait until it has completed. Enter y to continue.

    3) If you continue, you see something like the following:

```
Removing the user-defined functions ...

The jar file with jar_id 'DB2INST1.BPCODBUTIL' is updated
with the current version.
Loading the jar file 'B:\w\p\lib\bpcodbutil.jar' into the database.
The jar file 'BPCODBUTIL' was successfully installed.

Creating the Java based user-defined functions ...
```

    4) Success is indicated by the following message:

```
The setup of the database completed successfully.
```

b. If you want to activate the SQL-based UDFs, select option 2.

    1) When you see:

```
Specify the database schema to be used:
```

    Enter the name of the database schema.

    2) When you see:

```
WARNING: Switching the UDF implementation type may break any
running reporting function applications. Continue anyway?
y) yes
n) no
Your selection:
```

    Enter y to continue or n not to continue.

    3) If you see:

```
Removing the user-defined functions ...

Creating the SQL based user-defined functions ...

Do you also want to remove the jar file from the database?
y) yes
n) no
Your selection:
```

    Enter y to remove the JAR file from the database, or n not to remove it.

    4) Success is indicated by the following message:

```
The setup of the database completed successfully.
```

c. Optional: To determine whether the selected UDF implementation is Java or SQL, and in the case that Java is active, to also verify whether the JAR file is installed, select option 3. If, for example, the Java implementation is active, you should get a message like the following:

```
The active UDF implementation is Java.
Tested functionality of the UDF, is working
```

d. Optional: To install or remove the JAR file that is required for the Java-based UDFs, or to list all JAR files that are installed in the database, select option 4, then when you see the following menu:

```
List, install or remove jar files containing the java based functions

    1) Install the jar file containing the reporting function functions
       into the database
    2) Remove the jar file containing the reporting function functions
       from the database
    3) List installed jar files

 0) Exit Menu
```

- Select option 1 to install the JAR file.
- Select option 2 to remove the JAR file.
- Select option 3 to list which JAR files are installed in the database.
- Select option 0 to exit from the menu.

e. Select option 0 repeatedly to return to the menu shown in step 1 on page 510.

The reporting database will use the UDFs that you selected.

Configuring the Business Process Choreographer event collector application:

The Business Process Choreographer event collector is a prerequisite for using the Business Process Choreographer Explorer reporting function. You can install and configure the event collector application using an interactive tool or the administrative console.

The Common Event Infrastructure (CEI) must be configured on the deployment target where you want to install the event collector application.

To configure Business Process Choreographer event collector, perform one of the following:

Using the setupEventCollector tool to configure a Business Process Choreographer event collector:

This describes how use an interactive menu-driven tool to install and configure the event collector application on a server or cluster.

1. Change to the directory where the Business Process Choreographer configuration scripts are located.

   - **Linux** **UNIX** *install_root*/ProcessChoreographer/config

   - **Windows** *install_root*\ProcessChoreographer\config

2. Start the tool to set up the event collector, as described in "setupEventCollector tool" on page 522. For example, to start the tool to work with a server named server1 enter one of the following commands:

   - **Linux** **UNIX** setupEventCollector.sh -server server1

   - **Windows** setupEventCollector.bat -server server1

   You see the Commands Menu:

```
Commands Menu

    1) Prepare a database for the Event Collector and reporting function
    2) Install the Event Collector application
    3) Remove the Event Collector application and related objects
    4) Change configuration settings of an installed Event Collector
```

```
   5) Drop the database schema of the Event Collector and reporting function
   6) Administer reporting function related user-defined funtions

   0) Exit Menu
```

3. To install the Business Process Choreographer event collector application:

   a. Select option **2**. The following is displayed:

   ```
   Create required objects and install the WebSphere Business Process
   Choreographer Event Collector application ...
   ```

   b. If you are installing on a standalone server, you see:

   ```
   Working on node 'your_node_name', server 'your_server_name'.
   ```

   c. If you are installing the application on a deployment manager, you must select the deployment target from a list of all available targets. For example:

   ```
   Select the deployment target to install to:

     1) Cluster 'cluster1'
     2) Node 'Node04', Server 'managed1'
     3) Node 'Node04', Server 'managed2'

     0) Exit Menu
   ```

   d. While the tool searches for an existing event collector installation in a network deployment environment, you will see something like:

   ```
   Searching for an already installed Event Collector on 'deployment_target'
   ```

   e. If there is already an instance of the event collector application installed, you see:

   ```
   Do you want to overwrite the existing application?
     o) Overwrite
     a) Abort
   ```

   - Enter **o** to overwrite the existing event collector application. All installation values may be reentered and the event collector application is updated.

   - Enter **a** to exit without installing the event collector.

4. When you see:

   ```
   Specify the JNDI name of the database where the WebSphere Business Process
   Choreographer Event Collector should store the collected events.
   Enter '?' to get a list.
   Your selection : [jdbc/BPEDB]
   ```

   Enter the JNDI name that is used to connect to the database. You can also enter **?** to get a list of all registered data sources. For example:

   ```
   jdbc/BPEDB
   jdbc/DefaultEJBTimerDataSource
   jdbc/mediation/messageLog
   ```

5. When you see:

   ```
   Specify the database schema to be used.
   Enter a space character or leave empty to use the default schema of the
   datasource. [] :
   ```

   Enter the name of the schema for the database tables where the event collector stores the events. To use the user ID that is specified in the authentication alias of the data source definition as the schema, enter a space character or leave the field empty.

   All required objects are created and the enterprise application is installed. Success is indicated by the message:

   ```
   WebSphere Business Process Choreographer Event Collector
   installed successfully!
   ```

6. If CEI logging is not enabled on the server, you see the following:

```
Checking if CEI event logging is enabled ...

Warning: The process container of server_name has CEI event
logging disabled.
To allow the Event Collector to work correctly, CEI event logging is required.
Do you want to enable the CEI event logging on server_name? (y/n)
```

- If you want the script to enable CEI logging on the named server, enter **y**.
- If you do not want the script to enable CEI logging on the named server, enter **n**.

Note: It is important that CEI logging is enabled when you start working with the Business Process Choreographer Explorer reporting function.

7. When prompted:

```
Do you want to save the changes? (y/n)
```

If there were no error messages, enter **y** to save the configuration. If there were errors, enter **n** to discard the changes and keep your original configuration. Check the log file named **setupEventCollector.log**, which is located in the `logs` directory of the profile.

For example, on Windows, if your profile is named **myServer** and your profiles are stored in *install_root***profiles**, the log file is located in *install_root***profiles****myServer****logs**.

8. Enter **0** to exit the menu.

9. Activate the changes:
- If you specified the **-conntype NONE** option when starting the tool, your changes become active after a server restart.
- If you did not specify the **-conntype NONE** option when starting the tool, and you enabled CEI logging on the server during the installation of the Business Process Choreographer event collector, use the administrative console to stop and restart the **BPEContainer** application.

The Business Process Choreographer event collector application is installed and configured.

Using the administrative console to configure a Business Process Choreographer event collector:

This describes how to use the administrative console to install an instance of the Business Process Choreographer event collector on a given server or cluster.

You have prepared the reporting database.

1. In the administrative console, navigate to the Business Process Choreographer event collector configuration page: Click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Business Process Choreographer Event Collector**.

2. To create a new configuration:
   a. Enter or select values for the following fields:
      - Database name.
      - Schema name.
      - Enable or clear the option to create the database tables the first time that database is used.
      - User name and password to connect to the database.
      - Database server's host name or IP address.
      - Port number for the database server.
      - JDBC provider.
      - Observation target:
        - **Managed Business Process Choreographer container**
        - **Existing event group name**

– **Event group name**
   b. Click **Apply** to deploy the application.
   c. In case of problems, check the SystemOut.log file. Otherwise, save the changes to the master configuration.
   d. Start the application by clicking **Applications** > **Application Types** > **WebSphere enterprise applications**, select the application **BPCECollector_*scope***, where *scope* identifies the deployment target, then click **Start**.

The Business Process Choreographer event collector is configured.

Enabling the Business Process Choreographer Explorer reporting function after migration:

The Business Process Choreographer Explorer reporting functionality is deprecated. To monitor and report on BPEL processes, use IBM Business Monitor.

If you migrated from version 6.0.2 or 6.1.x, any existing Business Process Choreographer Observer and Explorer configurations are migrated and can still be used, but the new Business Process Choreographer Explorer reporting function, which can replace the Business Process Choreographer Observer is disabled.

You have migrated from a previous release, your Business Process Choreographer Explorer configurations are migrated, and any existing Business Process Choreographer Observer configurations are migrated.

Your old Business Process Choreographer Observer is not modified, it remains at the code level that you migrated from. The old URL (the default is ***host:port*/bpcobserver**) will continue to work, until you manually remove the Business Process Choreographer Observer application, and switch to using the new Business Process Choreographer Explorer reporting function, which you can do whenever it is convenient.

1. If the Business Process Choreographer Observer and Business Process Choreographer Explorer were configured in the migration source release, then a template JACL script is generated during migration, which you must edit and run to enable the Business Process Choreographer Explorer reporting function.
   a. Locate the script file:
      • On a stand-alone server:
         – `Linux` `UNIX` *profile_root*/ProcessChoreographer/migrate_BPCObserver_*scope*.jacl.
         – `Windows` *profile_root*\ProcessChoreographer\migrate_BPCObserver_*scope*.jacl.
      • In a network deployment environment, it is generated in the deployment manager profile. Do not run the script before all the profiles where Business Process Choreographer Explorer instances run have been migrated.

      The script file name has the postfix *scope*, which has the value of *nodeName_serverName* or *clusterName*.
   b. Edit the generated script file according to the instructions in the script file.
   c. To enable the reporting function on the selected Business Process Choreographer Explorer instance, run the customized script according to the instructions in the script file.
   d. In a network deployment environment, make sure that there is a data source pointing to the reporting database, and that it is visible in the scope of your Business Process Choreographer Explorer reporting function. If your previous Business Process Choreographer Observer and Business Process Choreographer Explorer configurations were on different deployment targets or if you want to enable the reporting function on multiple instances of Business Process Choreographer Explorer that are installed in different clusters, then you might need to create a new data source.
2. Make sure that the server or servers for the Business Process Choreographer Explorer are running, and that the Business Process Choreographer Explorer application is started.

3. Enable existing clients. Either notify all users to use the new URL (default: **host:port/bpc**) instead of the old URL (default: **host:port/bpcobserver**), or configure an automatic redirection on your Web server.

4. Test that clients can access the Business Process Choreographer Explorer reporting function and that it is working correctly.

5. To undeploy the old Business Process Choreographer Observer enterprise application, perform the following:

   a. In the administrative console, click **Applications** > **Application Types** > **WebSphere enterprise applications**.

   b. Locate the Business Process Choreographer Observer instances. Their names start with **BPCObserver_*scope***.

      - If Business Process Choreographer Observer was installed on an application server, *scope* has the value of *nodeName_serverName*.

      - If Business Process Choreographer Observer was installed on a cluster, *scope* has the value of *clusterName*.

      Note: If the context root is not the default **/bpcobserver**, the application name also has the context root appended to it, *_contextRoot*.

   c. To undeploy the Business Process Choreographer Observer application, select the application instance that you want to remove, then click **Undeploy** > **OK** > **Save**.

The Business Process Choreographer Explorer reporting function is enabled, existing users can access it, and the old Business Process Choreographer Observer application has been removed.

Using the administrative console to configure the Business Process Choreographer Explorer reporting function:

This describes how to use the administrative console to configure an instance of the Business Process Choreographer Explorer reporting function to connect to the data source for a particular event collector.

You have configured the Business Process Choreographer event collector and the Business Process Choreographer Explorer, but you did not select the option to configure the Business Process Choreographer Explorer reporting function.

1. In the administrative console, navigate to the Business Process Choreographer Explorer configuration page: Click either **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* or **Servers** > **Server Types** > **WebSphere application servers** > *server_name*, then on the **Configuration** tab, in the **Business Integration** section, expand **Business Process Choreographer**, and click **Business Process Choreographer Explorer**

2. Select the Business Process Choreographer Explorer instance that you want to enable the reporting function for.

3. If the option for **Enable reporting function** is disabled, then it is already configured.

4. If the option for the Business Process Choreographer Explorer reporting function is enabled, you can configure it by performing the following.

   a. Ensure that a Business Process Choreographer event collector is installed and configured.

   b. Select **Enable reporting function**.

   c. Select which Business Process Choreographer event collector will be visualized. If the list is empty, you must first install and configure a Business Process Choreographer event collector, as described in "Configuring the Business Process Choreographer Explorer reporting function and event collector" on page 488.

   d. For **Report at snapshot range** specify how many days of data will be visualized.

5. Click **Apply**. Messages are displayed indicating the progress.

6. Optional: If any problems are reported, check the SystemOut.log file.

The Business Process Choreographer Explorer reporting function is configured and ready to use.

You can configure more instances of the Business Process Choreographer Explorer reporting function, on the same or different deployment targets, however, each instance must connect to a different event collector data source.

Changing configuration parameters for the Business Process Choreographer Explorer reporting function:

Tuning the configuration parameters for the Business Process Choreographer Explorer reporting function and event collector applications is important to enable verification and improve performance.

Changing default values

The default values are more suitable for a production system than for a test system. If you are setting up the Business Process Choreographer for development or testing, it makes sense to change the following configuration parameters before you verify that the configuration is working:

- Change BPCEventTransformerEventCount to the value zero.
- Change BPCEventTransformerToleranceTime to the value one.

Making these changes ensures that even when events that are emitted at lower rates than in a production system, the events become available in one minute.

Configuration parameters for the event collector

Tuning the numerical parameters affects how often the event transformer is triggered, and the age at which events are made available to the Business Process Choreographer Explorer reporting function.

Configuration parameter	Data type / Units	Default value	Description
ObserverSchemaName	String	not set	This identifies the database schema that is used as a prefix for all database objects. If it is left empty, the default is to use as a prefix, the user ID that is used to connect to the database. This user ID is set as part of the data source definition in the administrative console. If you specify a value for this parameter, the user ID specified at the data source must have sufficient rights to access the database objects for this schema. You might need to change this parameter if did not specify a schema when you created the setup, or if you change the runtime user ID or the database provider.

Configuration parameter	Data type / Units	Default value	Description
BPCEventTransformer EventCount	Integer / Events	500	The number of events after which the event collector triggers the transformer to transform the collected events into a format suitable for the Business Process Choreographer Explorer reporting function.

When you are developing, testing, and experimenting, the default value is probably too high, and causes events to remain unobservable for a long time. To make events available faster, you can set this value to zero. Every future event will then trigger the transformer, and will become visible in the Business Process Choreographer Explorer reporting function. If you change the value to zero, any past events that have not yet been transformed will be transformed as soon as a new event is generated. Using a zero value is not recommended for a production system. |
| BPCEventTransformer MaxWaitTime | Integer / Minutes | 10 | The maximum time that can pass before the transformer is triggered - even though the number of events specified with BPCEventTransformer EventCount is not reached. |
| BPCEventTransformer ToleranceTime | Integer / Minutes | 10 | The minimum age in minutes for an event to become visible in the Business Process Choreographer Explorer reporting function. This enables related events to be reliably correlated. Using the value zero should be avoided, otherwise it is possible that an event is processed before the predecessor event has arrived.

When you are developing, testing, and experimenting, the default value is probably too high, and causes new events to remain unobservable for 10 minutes. If you set this to the value 1, all transformed events that are more than one minute old will be visible in the Business Process Choreographer Explorer reporting function. |

Configuration parameter	Data type / Units	Default value	Description
ObserverCreateTables	Boolean		This parameter indicates if the Business Process Choreographer Explorer reporting function schema should be created when the EJB connects to the database the first time. Valid values are 'yes' and 'no'. You might want to enable or disable this, for example, if you want to reuse an existing setup, but want to use a new data source.

When the event collector receives a business relevant event from the Common Event Infrastructure (CEI), the event is saved in the database. After some time has passed and more events have been received, the transformer is started. The transformer performs a batch transformation of the stored events and writes them back to the database in a format that can be used for generating reports. Only events that have been processed by the transformer are available for the Business Process Choreographer Explorer reporting function.

Every time that a new event is received by the event collector, if one or both of the following conditions are true, then the transformer process is started:

- The number of events received since the transformer was last started is greater than the value for BPCEventTransformerEventCount.
- The time since the transformer was last started is greater than the value of BPCEventTransformerMaxWaitTime, in minutes.

If these values are made smaller, events will be available sooner for generating reports, but there is some extra cost in transforming small numbers of events. This requires a balance between having better transformation throughput, by processing larger numbers of events, against the possible need to make the events available in the reporting database as fast as possible.

Each time that the transformer is started, it processes all events that are older than BPCEventTransformerToleranceTime in minutes. It does not process more recent events because events are not necessarily published in the order that they occur. The default setting of BPCEventTransformerToleranceTime assumes that no event will take more than 10 minutes to be received and written to the event collector table.

Changing configuration parameters for the event collector

To change event collector parameters, perform the following:

1. Start the tool to set up the event collector, as described in "setupEventCollector tool" on page 522. You see the following menu:

```
1) Prepare a database for the Event Collector and reporting function
2) Install the Event Collector application
3) Remove the Event Collector application and related objects
4) Change configuration settings of an installed Event Collector
5) Drop the database schema of the Event Collector and reporting function
6) Administer reporting function related user-defined functions

0) Exit Menu
```

2. Select option 4 to display the list of parameters that you can change:

```
1) BPCEventTransformerEventCount
2) BPCEventTransformerMaxWaitTime
3) BPCEventTransformerToleranceTime
```

```
    4) ObserverCreateTables
    5) ObserverSchemaName

    0) Exit Menu
```

3. Select the number of the parameter that you want to change. The parameter's name, description, type, units, and current value are displayed.

4. To change the specified value, enter a new value and press Enter. Pressing Enter without a new value returns to the parameter list.

5. If you want to change the value of another parameter, repeat from step 3.

6. Enter 0 to exit the list. You are asked whether you want to save the changes.

7. To save all changes, enter **y**, otherwise enter **n** to discard all changes.

8. To activate the changes, restart the BPCECollector application.

Configuration parameters for the Business Process Choreographer Explorer reporting function

The value for the ReportAtSnapshotRange parameter can have a big impact on the performance of snapshot reports.

Configuration parameter and clientconfig.jacl parameter	Data type / Units	Default value	Description
ObserverSchemaName **-reportSchemaName** *schemaName*	String	not set	This identifies the database schema that is used as a prefix for all database objects. If it is left empty, the default is to use as a prefix, the user ID that is used to connect to the database. This user ID is set as part of the data source definition in the administrative console. If you specify a value for this parameter, the user ID specified at the data source must have sufficient rights to access the database objects for this schema. You might need to change this parameter if did not specify a schema when you created the setup, or if you change the runtime user ID or the database provider. This must match the value for the event collector.
ReportAtSnapshotRange **-reportAtSnapshotRange** *number*	Integer / Days	**60**	A snapshot report is built by evaluating all events that are older than the qualifying snapshot date and time. This defines the period of time in which events can be included in a snapshot report. Only events that have been emitted within this period are evaluated by the snapshot report. If this value is too high, a very large number of events might have to be processed, and generating a report can take a long time. Try setting this value to the maximum duration of a process instance in your business environment.

Configuration parameter and clientconfig.jacl parameter	Data type / Units	Default value	Description
ObserverCreateTables -reportCreateTables { yes | no }	Boolean	For DB2 on z/OS: **no**. For all other database types: **yes**.	This parameter indicates if the Business Process Choreographer Explorer reporting function schema is created when the EJB connects to the database the first time. Valid values are 'yes' and 'no'.

Changing configuration parameters for the Business Process Choreographer Explorer reporting function

To change Business Process Choreographer Explorer reporting function parameters, you can run the clientconfig.jacl script using one of the following parameters: **-reportSchemaName** *schemaName*, **-reportAtSnapshotRange** *number*, and **-reportCreateTables { yes | no }**. For more information about these parameters, see "Using the clientconfig.jacl script file to configure Business Process Choreographer Explorer or Business Process Archive Explorer" on page 484.

setupEventCollector tool:

Use setupEventCollector to interactively configure or remove the Business Process Choreographer event collector application, to setup the database, and to administer user-defined functions for the database. This tool uses wsadmin scripting. You must configure an event collector if you want to use the Business Process Choreographer Explorer reporting function.

Location

This tool is located in the Business Process Choreographer subdirectory for configuration scripts:

*   Linux UNIX *install_root*/ProcessChoreographer/config

*   Windows *install_root*\ProcessChoreographer\config

Restrictions
*   In a network deployment environment, you must start the tool on the deployment manager node, using the -profileName option to specify the deployment manager profile .
*   This tool is only available in English.

Parameters
```
[-conntype SOAP | RMI | JMS | NONE]
[-user userID -password password]
[-profileName profileName]
( [-node nodeName] [-server serverName] ) | ( -cluster clusterName )
[-remove [-silent]]
```

Where:

-conntype SOAP | RMI | JMS | NONE
    The connection mode that wsadmin tool uses. In a standalone server environment only include the **-conntype NONE** option if the application server is not running. In a network deployment environment, only include **-conntype NONE** option if the deployment manager is not running.

-user *userID* **-password** *password*
    If administrative security is enabled, also provide a valid user ID and password for the tool to use.

-profileName *profileName*
    If you are not configuring the default profile, provide the name of the profile that you want to configure.

-node *nodeName*

>The name of the node. This parameter is optional. The default value is the local node.

-server *serverName*

>The name of the server. This parameter is optional.

-cluster *clusterName*

>The cluster name *clusterName* . This parameter is optional.

-remove

>Specify this option to remove the event collector application. If you do not specify this option, the default is that the application will be configured.

-silent

>This option can only be used with the remove option. It causes the tool to not output any prompts. This parameter is optional.

Note: If you do not specify the -node, -server, nor -cluster parameters, you will be prompted for the deployment target during configuration.

Example: Starting the tool

To start the tool to work with a server named server1 enter one of the following commands.

- **Linux** **UNIX** `setupEventCollector.sh -server server1`

- **Windows** `setupEventCollector.bat -server server1`

You will see the Commands menu:

```
1) Prepare a database for the Event Collector and reporting function
2) Install the Event Collector application
3) Remove the Event Collector application and related objects
4) Change configuration settings of an installed Event Collector
5) Drop the database schema of the Event Collector and reporting function
6) Administer reporting function related user-defined functions

0) Exit Menu
```

Using the tool

How to use this tool for particular tasks is described in the following topics.

Related concepts:

"User-defined functions for Business Process Choreographer Explorer reporting function" on page 505
With Business Process Choreographer Explorer reporting function you can run reports based on timeslices or time intervals that result in SQL queries. To perform these reports, Business Process Choreographer Explorer reporting function requires some specific user-defined functions (UDFs) to be installed in the reporting database.

Verifying the Business Process Choreographer Explorer reporting function:

After configuring the Business Process Choreographer Explorer reporting function, verify that it works correctly.

Initially, the Business Process Choreographer Explorer reporting function database is empty.

1. Generate some business events.

   a. In a browser, start the Business Process Choreographer Explorer by opening the URL **http://*host:port*/*context_root*.** Where *host* is the name of the host where your application server is running, *port* is the port number for your application server (the default is 9080), and *context_root* is typically **bpc**.

b. Perform some actions that will generate business events, for example, start a process instance.
2. Click **Reports**. If you see no events, wait a few minutes, restart the event collector application, and then refresh your browser view.

   Note: Using the default values for BPCEventTransfomerMaxWaitTime and BPCEventTransfomerToleranceTime, it could take up to 20 minutes until the transformer is triggered and the events in the event collector table are old enough to be processed and made available. For information about these parameters, including how to change them and suggested values for testing purposes, see "Changing configuration parameters for the Business Process Choreographer Explorer reporting function" on page 518.
3. Verify that the events you expect to be available are displayed.
4. In case of problems, see Troubleshooting reports.

The Business Process Choreographer Explorer reporting function is working.

Configuring Business Process Archive Explorer:

To configure Business Process Archive Explorer, you must run a script.

You have already configured a Business Process Archive Manager, and you want to configure a Business Process Archive Explorer to work with it.

1. If you have not already done so, plan your Business Process Archive Explorer by performing "Planning for the Business Process Choreographer Explorer and Business Process Archive Explorer" on page 110.
2. Create the Business Process Archive Explorer by performing "Using the clientconfig.jacl script file to configure Business Process Choreographer Explorer or Business Process Archive Explorer" on page 484.

   Note: If you want the Business Process Archive Explorer to provide the reporting function, make sure that you specify the same data source that the Business Process Choreographer event collector uses to access the reporting database.
3. Optional: Update your virtual host configuration. By default, the web modules of the Business Process Choreographer applications are configured for the **default_host** virtual host. Make sure that the ports associated with the host alias are correct. You might need to add host aliases for the host names and ports of additional cluster members or for the Web server that is used. For more details about virtual hosts, refer to Virtual hosts.

The Business Process Archive Explorer is configured and ready to use.

Configuring a remote client application:

Configuring a remote Business Process Choreographer client application that runs on a Process Server client installation.

You have performed "Planning for a remote client application" on page 119, and know whether you are creating the "single-cell" scenario or the "cross-cell" scenario.

1. For the "single-cell" scenario, where the Process Server client installation is in the same cell as the Business Process Choreographer server or cluster that the client connects to, perform the following:
   a. Install and configure the Process Server client:
      1) Install the Process Server client without installing the server: Make sure that the **Process Server - Client** option is selected and the **Process Server - Server** option is not selected.

Note: If you want to use the Process Server client in a cluster, then you must install the Process Server client on all WebSphere Application Server installations that host cluster members.

2) If the profile already exists, make sure that it is augmented with Feature Pack for SCA Version 1.0 with SDO 2.1.1.

3) If the profiles do not yet exist, perform the following:

   a) Either start the profile management tool and select **Custom profile with Feature Pack for SCA Version 1.0 with SDO 2.1.1**, or if you are using the **manageprofiles** command line tool, use the following profile template:

   - `Linux` `UNIX` `install_root/profileTemplates/SCA/managed.sdo`

   - `Windows` `install_root\profileTemplates\SCA\managed.sdo` profile template.

   b) Federate the profile into the IBM Business Process Manager Advanced cell. You can also perform this action later, using the **addNode** command.

   c) Using the administrative console, create an application server using the "default" server template on the Process Server client node.

b. Optional: Configure the Business Process Choreographer Explorer on the application server in the Process Server client using either the administrative console or the clientconfig.jacl script. For the Business Process Choreographer container target, make sure that you select the Process Server server or cluster that hosts the Business Flow Manager and Human Task Manager.

c. Optional: Deploy and configure a custom client application.

   1) Deploy the custom client application on the application server in the Process Server client installation.

   2) Edit the EJB bindings for the custom client applications:

      a) Using the administrative console, click **Applications** > **Application Types** > **WebSphere enterprise applications**.

      b) Click on your custom client application.

      c) Under **References**, select **EJB references**. You will see the resource references specified by your client application.

      d) Locate the references to the Business Process Choreographer API EJBs. You will see the default resource reference names and the following JNDI names for the target resources:

      ```
      ejb/BusinessFlowManagerHome    com/ibm/bpe/api/BusinessFlowManagerHome
      ejb/HumanTaskManagerHome       com/ibm/task/api/HumanTaskManagerHome
      ```

      e) Change the target resource JNDI names to values where the Business Flow Manager and Human Task Manager API are located in your cell:

      - If Business Process Choreographer is configured on another server in the same cell, the setting has the following structure:

      ```
      cell/nodes/nodename/servers/servername/com/ibm/bpe/api/BusinessFlowManagerHome
      cell/nodes/nodename/servers/servername/com/ibm/task/api/HumanTaskManagerHome
      ```

      - If Business Process Choreographer is configured on a cluster in the same cell, the setting looks like:

      ```
      cell/clusters/clustername/com/ibm/bpe/api/BusinessFlowManagerHome
      cell/clusters/clustername/com/ibm/task/api/HumanTaskManagerHome
      ```

   3) Save and synchronize your changes.

   4) Restart your client application.

d. The default configuration of the Remote Artifact Loader (RAL) allows the unsecured transmission of artifacts between the client and the server. To enable security for this connection, refer to Remote artifact loader.

2. If you want a " cross-cell" scenario, where the Process Server client is not located in the cell that has the managed server or cluster with Business Process Choreographer configured on it, you can install

the Process Server client on any WebSphere Application Server installation that hosts standalone profiles or managed profiles for a different network deployment cell. As a minimum, this network deployment cell only requires a WebSphere Application Server deployment manager. To set up your Process Server client installation in this kind of environment and configure it to access the cell with the Business Process Choreographer configuration, perform the following:

a. Install and configure the Process Server client:

1) Install the Process Server client without installing the server: Make sure that the **Process Server - Client** option is selected and the **Process Server - Server** option is not selected.

   Note: If you want to use the Process Server client in a cluster, then you must install the Process Server client on all WebSphere Application Server installations that host cluster members.

2) If the profile already exists, make sure that it is augmented with Feature Pack for SCA Version 1.0 with SDO 2.1.1.

3) If the profiles do not yet exist, and you are using a **standalone** profile, either start the profile management tool and select **Application server with Feature Pack for SCA Version 1.0 with SDO 2.1.1**, or if you are using the **manageprofiles** command line tool, use the following profile template:

   - Linux   UNIX   `install_root/profileTemplates/SCA/default.sdo`

   - Windows `install_root\profileTemplates\SCA\default.sdo`

   For example, to augment a standalone profile named "wp_profile" on a Linux or UNIX platform, using the **manageprofiles** tool, enter the following:

   ```
   install_root/bin/manageprofiles.sh -augment -templatePath
   install_root/profileTemplates/SCA/default.sdo -profileName wp_profile
   ```

   After several minutes, when the augmentation has succeeded, you should see the following message:

   ```
   INSTCONFSUCCESS: Profile augmentation succeeded.
   ```

4) If the profiles do not yet exist, and you are using a **managed** profile, perform the following:

   a) Either start the profile management tool and select **Custom profile with Feature Pack for SCA Version 1.0 with SDO 2.1.1**, or if you are using the **manageprofiles** command line tool, use the following profile template:

      - Linux   UNIX   `install_root/profileTemplates/SCA/managed.sdo`

      - Windows `install_root\profileTemplates\SCA\managed.sdo`

   b) Federate the profile into the Process Server cell. You can also perform this action later, using the **addNode** command.

   c) Using the administrative console, create an application server using the "default" server template on the Process Server client node.

b. Optional: Install and configure a custom client application.

1) Make sure the custom client application uses the Business Process Choreographer EJB APIs.

2) Install the custom client application on the application server or cluster in the Process Server client installation.

c. Define a new indirect namespace binding (or bindings) to connect to the cluster or server where Business Process Choreographer is configured:

1) Using the administrative console on the client cell, click **Environment** > **Naming** > **Name Space Bindings**.

2) For **Scope**, select the cell.

3) Depending on whether the client application uses one or both of the Business Flow Manager EJB API and the Human Task Manager EJB API, perform the following steps once or twice to create a new binding for one or both of the EJB APIs:

a) Click **New**.

b) For the **Binding Type**, select **Indirect**. In the next screen, specify the following properties:

   i. A unique binding identifier name. Although you are free to choose a unique name, for consistency with the service component architecture (SCA), you can derive a valid name from the namespace by replacing the forward slashes in the namespace with underscore characters. For example, the namespace

   bpc/*remoteCellName_remoteNode_remoteServer*/com/ibm/bpe/api/BusinessFlowManagerHome

   becomes the binding ID name

   bpc_*remoteCellName_remoteNode_remoteServer*_com_ibm_bpe_api_BusinessFlowManagerHome

   ii. The namespace of the client to be used for the binding. For consistency, consider using the following convention:

   - If the remote Business Process Choreographer configuration is on a server: bpc/*remoteCellName_remoteNode_remoteServer*/com/ibm/bpe/api/ BusinessFlowManagerHome or bpc/*remoteCellName_remoteNode_remoteServer*/com/ibm/ task/api/HumanTaskManagerHome

   - If the remote Business Process Choreographer configuration is on a cluster: bpc/*remoteCellName_remoteCluster*/com/ibm/bpe/api/BusinessFlowManagerHome or bpc/*remoteCellName_remoteCluster*/com/ibm/task/api/HumanTaskManagerHome

   iii. The provider URL property for the naming server that is used by the server or cluster, where the Business Process Choreographer configuration exists that the client will connect to. For example, corbaloc:iiop:myremotehostname:2809. Make sure that the bootstrap port matches the BOOTSTRAP_ADDRESS of the server (or one of the members of the cluster) where Business Process Choreographer is hosted.

c) Specify the target resource JNDI name where the Business Flow Manager API or Human Task Manager API is located.

   - If Business Process Choreographer is configured on a standalone server, the setting has the following structure:

   com/ibm/bpe/api/BusinessFlowManagerHome
   com/ibm/task/api/HumanTaskManagerHome

   - If Business Process Choreographer is configured on in a network deployment environment, the setting has the following structure:

   cell/nodes/*nodename*/servers/*servername*/com/ibm/bpe/api/BusinessFlowManagerHome
   cell/nodes/*nodename*/servers/*servername*/com/ibm/task/api/HumanTaskManagerHome

   - If Business Process Choreographer is configured on a cluster, the setting looks like:

   cell/clusters/*clustername*/com/ibm/bpe/api/BusinessFlowFlowManagerHome
   cell/clusters/*clustername*/com/ibm/task/api/HumanTaskManagerHome

4) Using the administrative console on the client system:

a) Click **Applications** > **Enterprise Applications** > *client_application_name*, then on the name of the client application, then in the **References** section, select **EJB references**.

b) There will be one **Target Resource JNDI Name** field for each namespace that you defined. Enter the JNDI name or names that you specified in step 2c3bii for the Business Flow Manager, Human Task Manager, or both.

c) Save and synchronize your changes.

d) Restart your client application.

You have configured a remote Business Process Choreographer client application that uses a Process Server client installation.

Related tasks:
"Configuring Business Process Choreographer Explorer" on page 483
You can either run a script or use the administrative console to configure Business Process Choreographer Explorer.

Activating Business Process Choreographer:

After configuring Business Process Choreographer, you must restart the affected server or cluster.

To activate Business Process Choreographer:
1. If you configured Business Process Choreographer on a server, restart the server.
2. If you configured Business Process Choreographer on a cluster, restart the cluster.
3. Make sure that there are no error messages in the **SystemOut.log** file for the application server. On a cluster, check the log for all application servers in the cluster.
4. Verify that the Business Flow Manager and Human Task Manager applications have started successfully: In the administrative console, click **Applications** > **Application Types** > **WebSphere enterprise applications** and verify that the applications with names starting with **BPEContainer_***scope* and **TaskContainer_***scope* have started.

   Where, the value of *scope* is *nodeName_serverName*, if you configured Business Process Choreographer on an application server, or the *clusterName* if you configured Business Process Choreographer on a cluster.

Business Process Choreographer is running.

You are ready to verify that Business Process Choreographer is working.

Verifying that Business Process Choreographer works:

Run the Business Process Choreographer installation verification application.
1. Using either the administrative console or the `wsadmin` command, deploy the application in *install_root*/**installableApps/bpcivt.ear**.

   Restriction: In a network deployment environment, you can only deploy one instance of the Business Process Choreographer installation verification application. For example, if you have two Business Process Choreographer clusters in the same network deployment cell, you can deploy the **bpcivt.ear** application only on one of the clusters. Later, if you want to deploy it on the second cluster, you must first undeploy it from the first cluster.
   After the enterprise application is deployed, it is in the state **stopped**, and any process and task templates that it contains are in the state **started**. No process or task instances can be created until the application is started.
2. Depending on where you configured Business Process Choreographer, make sure that either:
   • The application server is running.
   • At least one member of the cluster is running.
3. Make sure that the database system, and messaging service are running.
4. Select the application BPCIVTApp and click **Start** to start the application.
5. Verify that the application works. Using a Web browser, open the following page:
   `http://app_server_host:port_no/bpcivt`

   Where *app_server_host* is the network name for the host of the application server and *port_no* is the port number used by the virtual host to which you mapped the IVT Web module when installing the file `bpcivt.ear`. The port number depends on your system configuration. You should see a message indicating success.

6. Optional: Stop and remove the `bpcivt` application.
7. If an error occurs, it can be caused by any of the following:
   - If Business Process Choreographer cannot access the database, check that the database system is running, that all database clients are correctly configured, and that the data source is defined correctly. Make sure that the user ID and password for the data source are valid.
   - If Business Process Choreographer cannot read the input queues, check that the messaging service is running, and make sure that the JMS provider and JMS resources are defined correctly.

The basic functionality of your Business Process Choreographer configuration works.

If you have configured other optional parts, such as the Business Process Choreographer Explorer, Business Process Choreographer Explorer reporting function, or a people directory provider, they will need to be tested separately.

Understanding the startup behavior of Business Process Choreographer:

This topic explains why Business Process Choreographer is unavailable until all enterprise applications are started.

When the Business Process Choreographer is started or restarted, no messages in the internal queues are processed until all enterprise applications have started. It is not possible to change this behavior. The time that the Business Flow Manager and Human Task Manager are unavailable during a restart depends on how long it takes until all enterprise applications are started. This behavior is necessary to avoid navigating any processes with associated enterprise applications that are not running.

Starting to process messages in the internal queue before all applications are started would result in ClassNotFound exceptions.

Federating a stand-alone node that has Business Process Choreographer configured:

You can federate a server that is in a stand-alone profile to a new deployment manager cell.

The deployment manager is running, and you know its host name and port number. Business Process Choreographer is configured on the server in a stand-alone profile.

You have one or more applications, which contain BPEL processes or human tasks, running on a stand-alone server, and you want to federate this server into a network deployment environment.

1. If the node includes a large number of applications, increase the timeout for the administrative connector.
2. From the command line, run the **addNode** command with the -includeapps and -includebuses options. For details about this command and possible errors that can occur, refer to the WebSphere Application Server information center. For example, if the deployment manager has a host name of dmgr_host and uses port dmgr_port, enter the command:

   ```
   addNode dmgr_host dmgr_port -includeapps -includebuses
   ```

   For example, if the deployment manager has a host name of any.hostname.com and uses port 9043, your profile name is ProcSvr07, your user ID is admin, and your password is secret, enter the command:

   ```
   addNode any.hostname.com 9043 -profileName ProcSvr07 -username admin
           -password secret -includeapps -includebuses
   ```

   If any of the prerequisites are not met, an error message is displayed. Otherwise, the server is stopped and the server is federated into a new deployment manager cell.
3. Start the server to activate the changes.

4. If you cannot access the business applications that are running on the server, use the administrative console on the deployment manager to make sure that the virtual host and alias definitions for the application server match the new cell.

Your applications are now running on the same server, but the server is now in a cell that can be administered using the deployment manager.

If required, you can promote the server to a cluster.

Configuring business rules and selectors

Business rules and selectors provide flexibility in a business process by changing the results of a process based on a criteria. Before installing applications that contain business rules and selector components, you must install the business rules dynamic repository. You can install the business rules dynamic repository for a stand-alone server or for network deployment.

Configuring the business rule and selector audit log:

You can configure the server to use different values than the default values for the log that keeps track of new, changed, and deleted business rules and selectors. Changing the configuration can help you conserve resources on your server.

You must be at the administrative console to perform this task.

Required security role for this task: When security and role-based authorization are enabled, you must be logged in as a configurator to perform this task.

After you have run your server in production for a while, you may have determined that the default values the server uses for the business rules and selectors audit log need adjustment.

To configure the business rule and selector audit log, perform the following steps.
1. Navigate to the **Business Rules and Selectors Auditing** page by clicking **Servers > Application servers >** *servername* **Business Rules > Business Rules and Selectors Auditing**.
2. Do one of the following depending on the type of change you want.

Type of change	Actions
Immediate	1. Select the **Runtime** tab.
	2. Enter the desired changes.
	3. **Optional:** To make the changes permanent, copy them to the repository by selecting **Save runtime changes to configuration as well**.
	4. Click **OK** to make the changes and return to the previous page or **Apply** to make the changes and remain on this page.
Delayed	1. Select the **Configuration** tab.
	2. Enter the desired changes.
	3. Click **OK** to make the changes and return to the previous page or **Apply** to make the changes and remain on this page.
	4. When you want the changes to take effect, restart the server.

The audit log takes the attributes you specified.

Note: You may need to modify the configuration for business rules and selector auditing due to the way the server user identity is specified when security is enabled with WebSphere Application Server 6.1. If the default value is used for the server user identity, an automatically generated server identity value is recorded in the audit record for the user when any auditable action involving business rules or selectors is performed when the application containing the business rules or selectors is started after business rule or selector installation. An auditable action occurs when a business rule or selector artifact is changed through application startup after install, management clients, or import or export through the administrative console. The generated value may not match the format of other user IDs used in other audit records, and you may want a more consistent value.

You can specify a server identity by selecting the option to use a "Server identity that is stored in the repository," which will associate a user ID that is in the user repository with the server process. The audit records will use this identity when auditable actions involving business rules or selectors are performed when the application containing the business rules or selectors is started after the business rule or selector artifacts are installed in the repository.

The server identity value has no effect on audit actions involving changes through management clients such as the business rules manager or other administrative actions such as exporting or importing business rule groups. For these actions, the audit record will use the authenticated user.

For more information on changing the server user identity, see the topics under Securing applications and their environment and the WebSphere Application Server Network Deployment Security documentation.

Configuring business rule and selector auditing using commands:

Use commands to configure business rule and selector auditing when you need to change any of the characteristics while a server is running.

You must run these commands from a command line environment for the server.

Required security role for this task: When security and role-based authorization are enabled, you must be logged in as a configurator to perform this task.

There may be occasions when you need to change how many servers audit business rules and selectors and cannot restart the servers involved. Using the command line, you can automate configuring the servers in a batch mode. The following tasks show how to use commands to configure one server.

Important: These settings are not saved if you restart the server. To save the configuration after entering these commands, you must use the administrative console. Select **Servers > Server Types > WebSphere application servers >** *servername* **> Business Rules > Business Rules and Selectors Auditing > Runtime** or **Servers > Server Types > WebSphere application servers >** *servername* **> Selectors > Business Rules and Selector Auditing > Runtime**.

To configure business rule and selector auditing using commands, perform the following steps.

Note: The following task configures server **server1**. If the server is not named server1, replace **server1** below with the name of the server. All of the steps beginning at step 3 could be placed in a jacl script and run that way.

1. Enter the administrative environment.

   wsadmin

2. Decide whether you are configuring audit logging or changing an existing configuration.

Task	Command
Configuring audit logging	set mbean [$AdminControl queryNames *:*,name=CustomizationAuditMBean,process=server1]

Task	Command
Changing audit logging configuration	set auditconfig [$AdminConfig list AuditLog]

3. Enter the appropriate commands.

Commands to configure or change audit logging

Important: When entering commands that change an existing configuration, you must save the changes. The changes do not take effect until you restart the server.

The following are the commands you can enter:

$AdminControl invoke $mbean getSeparateAuditLogEnabled
   Use to determine whether logging is occurring to a separate audit log.

$AdminControl invoke $mbean setSystemOutAuditLogEnabled {*boolean*}
   Use to enable or disable logging to the SystemOut.log file. *Boolean* can either be true or false.

$AdminControl invoke $mbean getSeparateAuditLogFileName
   Use to determine the file name of the separate audit log.

$AdminControl invoke $mbean setSeparateAuditLogFileName {*filename*}
   Use to set the name of the new log file, for example, MyAudit.log.

$AdminControl invoke $mbean getSeparateAuditLogFileRolloverSize
   Use to determine the size of the audit log.

$AdminControl invoke $mbean setSeparateAuditLogFileRolloverSize *integer*
   Use to set the size of the audit log before the system rolls it over into a history file. The size is in megabytes.

$AdminControl invoke $mbean getSeparateAuditLogFileMaxNumberOfBackupFiles
   Use to determine the number of audit log history files.

$AdminControl invoke setSeparateAuditLogFileMaxNumberOfBackupFiles *integer*
   Use to set the number of audit log history files.

$AdminControl invoke $mbean setSeparateAuditLogEnabled {*boolean*}
   Use to start or stop logging to a separate log file. *Boolean* can either be true or false.

$AdminConfig showall $auditconfig
   Use to show the current audit log configuration.

$AdminConfig modify $auditconfig {{separateAuditLogEnabled true}}
   Use to enable logging to a separate audit log.

$AdminConfig modify $auditconfig {{systemOutAuditLogEnabled false}}
   Use to disable auditing to the system.Out file.

$AdminConfig modify $auditconfig {{customAuditLog {{maxNumberOfBackupFiles 7} {rolloverSize 7}}}}   Use to change the number of audit log history files and the size of the audit log file.

$AdminConfig modify $auditconfig {{customAuditLog {{fileName MyAudit.log}}}}
   Use to change the name of the audit log file.

$AdminConfig save
   Use to save the configuration.

Save these changes by opening the administrative console and selecting **Servers > Server Types > WebSphere application servers >** *servername* **> Business Rules > Business Rules and Selectors**

Auditing > Runtime or **Servers > Server Types > WebSphere application servers >** *servername* **> Selectors > Business Rules and Selector Auditing > Runtime**. Alternatively, enter `$AdminConfig save`.

Note: You may need to modify the configuration for business rules and selector auditing due to the way the server user identity is specified when security is enabled with WebSphere Application Server 6.1. If the default value is used for the server user identity, an automatically generated server identity value is recorded in the audit record for the user when any auditable action involving business rules or selectors is performed when the application containing the business rules or selectors is started after business rule or selector installation. An auditable action occurs when a business rule or selector artifact is changed through application startup after install, management clients, or import or export through the administrative console. The generated value may not match the format of other user IDs used in other audit records, and you may want a more consistent value.

You can specify a server identity by selecting the option to use a "Server identity that is stored in the repository," which will associate a user ID that is in the user repository with the server process. The audit records will use this identity when auditable actions involving business rules or selectors are performed when the application containing the business rules or selectors is started after the business rule or selector artifacts are installed in the repository.

The server identity value has no effect on audit actions involving changes through management clients such as the business rules manager or other administrative actions such as exporting or importing business rule groups. For these actions, the audit record will use the authenticated user.

For more information on changing the server user identity, see the topics under Securing applications and their environment and the WebSphere Application Server WebSphere Application Server Network Deployment Security documentation.

Considerations for installing the business rules manager:

If you are planning to use the business rules manager (also referred to as business process rules manager) in a distributed environment, you must understand the concepts of cells, nodes, and clusters and how to set up the business rules manager for best performance during run time.

The application server is organized on the concept of cells, nodes and servers. In a stand-alone server configuration, a cell contains one node, and each node contains one server. System administration applications and user applications all run in the same server. In a stand-alone server configuration, you can install the business rules manager in the same application server, and it can be accessed by the default URL.

In a distributed server configuration, you can configure a cell to contain multiple nodes, and each node can contain multiple application servers. Each cell constitutes a single administrative domain. With this configuration, you can use central administration, workload management, and failover configuration for the entire domain.

For best performance in a distributed server configuration, install the business rules manager on the administrative deployment target, an application server in the cell where business administration services are centrally hosted. This server is typically the same server that hosts the Common Event Infrastructure service.

Within a cell, all servers use and share a single business rules repository. When you access the business rules repository, you can access all dynamic business rule artifact definitions regardless of the exact location where the business application is installed.

Because of this central storage for all business rules in the cell at run time, you can deploy the business rules manager to any application servers in the cell, and the business rules manager gives a consistent view of all business rules within the cell. However, because of high-availability considerations, it is

recommended that system administrators deploy the business rules manager into the administrative deployment target, a dedicated application server in the cell where business administration services are centrally hosted. The administrative deployment target server is the same server where the Common Event Infrastructure service and other business administrative applications are installed. With this configuration, when you require high availability, you can cluster the administrative deployment target server to provide a scalable solution to the application users.

Installing the business rules manager using the administrative console:

You can install the business rules manager (also referred to as "business process rules manager") as an enterprise application on Process Server to manage business rules during run time. You can install the business rules manager simultaneously when creating an IBM Business Process Manager profile by selecting the check box on the Business Rules Manager Configuration page of the Profile Management tool. Alternatively, you can install the business rules manager through the configuration page of the administrative console or by using the JACL command for your operating system. For more information, see the individual topics for each installation method.

When security and role-based authorization are enabled, you must be logged in as an administrator or a configurator to perform this task.

To install the business rules manager using the administrative console, perform the following steps.
1. Ensure that the administrative console is running.
2. In the navigation pane click **Servers > Server Types > WebSphere application servers** or **Servers > Clusters > WebSphere application server clusters**.
3. Select the name of your server or cluster target.
4. On the Configuration-tabbed page, under **Business Integration**, expand **Business Rules** and click **Business Rules Manager Configuration**.
5. Under **General Properties** select the **Install business rules manager** check box.

   Note: If the business rules manager has already been installed, the check box will be checked but grayed out as it is not possible to uninstall the business rules manager from this page. However, you can uninstall it manually by going to the list of applications and uninstalling it from there.
6. In the **Context root** field either accept the default context root of /br or type a custom context root for the business rules manager URL.
7. Click **OK**.
8. Save the configuration.

In the navigation pane click **Applications > Application Types > WebSphere enterprise applications** and select **Start Business Rules Manager**.

Installing the business rules manager using the JACL command:

You can use a JACL command for Windows and Linux as an alternative to using the administrative console for installing the business rules manager. Using a JACL command is possible if you did not already install the business rules manager when you installed IBM Business Process Manager and created profiles.

Required security role for this task: When security and role-based authorization are enabled, you must be authenticated with a user ID that has been assigned to the administrator or configurator role to perform this task.

To install the business rules manager using the JACL command, perform the following steps.
1. Ensure that Process Server is started.

2. Open the shell environment or command prompt for your operating system, and go to the *install_root*/bin directory (*install_root*\bin directory for Windows).
3. Run the specific installation command for your operating system, as follows:
   - For Windows, run: **wsadmin.bat -f installBRManager.jacl [-s** *servername* **-n** *nodename* **| -cl** *clustername***] -ce** *cellname* **-r** *rootname*
   - For Linux, run: **wsadmin.sh -f ./installBRManager.jacl [-s** *servername* **-n** *nodename* **| -cl** *clustername***] -ce** *cellname* **-r** *rootname*

   To install and map the business rules manager to more than one target, run the following command for your operating system:
   - For Windows, run: **wsadmin.bat -f installBRManager.jacl -m "{{target1} {target2} ... {targetn}}" -ce** *cellname* **-r** *rootname*
   - For Linux, run: **wsadmin.sh -f installBRManager.jacl -m "{{target1} {target2} ... {targetn}}" -ce** *cellname* **-r** *rootname*
   - For z/OS, run: **wsadmin.sh -f installBRManager.jacl -m "{{target1} {target2} ... {targetn}}" -ce** *cellname* **-r** *rootname*

   Note: The parameter "-m" (implying "multiple") allows you to install and map the business rules manager to many targets at the same time. A pair of double quotation marks encloses the targets.

   where:

   servername
   > The name of the application server.
   >
   > The pair of arguments "-s servername" is required in the Network Deployment configuration if a cluster is not specified. If missing, the default value of *servername* is "server1".

   nodename
   > The name of the installation node.
   >
   > The pair of arguments "-n nodename" is required in the Network Deployment configuration if a cluster is not specified.

   clustername
   > The name of the cluster where you want to install the application.
   >
   > The pair of arguments "-cl clustername" is required in the Network Deployment configuration if a server name and a node name are not specified.
   >
   > **Note:** You must either specify the node and server or specify the cluster. Do not specify both.

   cellname
   > The name of the installation cell.
   >
   > The pair of arguments "-ce cellname" is optional.

   rootname
   > The name of the application root directory.
   >
   > The pair of arguments "-r rootname" is optional. If missing, the default value of *rootname* is "/br".

   target*i* The target (where *i* is 1, 2, ..., n) to which you want to install and map the business rules manager.
   > The target can be either (-s *servername* and -n *nodename*) or -cl *clustername*.

   Important: If IBM Business Process Manager is configured in a single-server environment, all of these pairs of arguments are optional. If Process Server is configured for a Network Deployment environment, one of the following argument pairs is required:
   - either (-s *servername* and -n *nodename*)

- or -cl *clustername*
- or -m "{{target1} {target2} ... {targetn}}"

The other argument pairs are optional.

Example: Suppose that you want to map the business rules manager application to the following targets:
- cluster "BofACluster"
- Web server "RedirectorServer" and node "AIXNode01"
- application server "LinuxServer" and node "LinuxNode02"

on context root "bofa/brm"

You would run the command, as follows:

install_root/bin/**wsadmin -f installBRManager.jacl -m "{{-cl BofACluster} {-n AIXNode01 -s RedirectorServer} {-s LinuxServer -n LinuxNode02}}" -r bofa/brm**

Installing the business rules manager using the AdminTask command:

You can install the business rules manager (also referred to as "business process rules manager") using the AdminTask command. Use the AdminTask command if you did not install the business rules manager when you installed IBM Business Process Manager and created profiles.

Required security role for this task: When security and role-based authorization are enabled, you must be logged in as an administrator or a configurator to perform this task.

To install the business rules manager using the AdminTask command, perform the following steps.
1. Ensure that IBM Business Process Manager is started.
2. In a command window, go the IBM Business Process Manager home directory and change to the directory /bin.
3. Run the wsadmin command to enter the wsadmin mode.
4. Enter one of the following commands to install the business rules manager:
   wsadmin> $AdminTask configBusinessRulesManager {-*serverName* <serverName> -*nodeName* <nodeName> -*contextRoot* <contextRoot>}
   Or
   wsadmin> $AdminTask configBusinessRulesManager {-*clusterName* <clusterName> -*contextRoot* <contextRoot>}
   where

   serverName
      The name of the application server.

   nodeName
      The name of the installation node.

   clusterName
      The name of the cluster where you want to install the application.

   contextRoot
      The context root used to launch the application. The default value is /br.
5. Run **wsadmin> $AdminConfig save** to save the configuration.

   Tip: You can run **$AdminTask help configBusinessRulesManager** to learn more about its parameters.

Example: To install the business rules manager on server "cvuServer" and node "cvuNode01" with context root "br", enter the following command:

wsadmin> $AdminTask configBusinessRulesManager {-*serverName* cvuServer -*nodeName* cvuNode01 -*contextRoot* br}

Then to save the configuration, enter:

wsadmin> $AdminConfig save

Configuring server security for the business rules manager:

If you want to use security with your server, you must configure the server that is using the business rules manager. On a server where security is not enabled, you can use the business rules manager without additional configuration.

If you have different roles or user IDs, you must set administrative security when configuring your server. To set security for your server, perform the following steps.

1. Set administrative security on user IDs by assigning a role to each ID when creating the user IDs. Create each user ID and map each user ID to the role `BusinessRuleUser`.

   To set the role, navigate to the business rule manager application (**Applications > Enterprise Applications**), select the business rule manager application, select the Security role to user/group mapping and update the BusinessRuleUser role.

   In addition to the BusinessRuleUser role, two other roles are defined: NoOne and AnyOne. NoOne is be used by developers to explicitly set the resources that should not be accessed directly. AnyOne is used by Tivoli Access Manager to obtain authorization for a Process Server environment.

   Note: In an ND environment with administrative security turned on, if you plan to run the business rules manager on port 908n, where n is a positive integer, you should make sure that port "944(n+3)" with the host value of "*" was configured. If there is no such port, manually configure it before you launch the business rules manager.

2. Set the session tracking mechanism to use cookies to track sessions.
3. At a minimum, set an appropriate session timeout value.

Configuring a Web browser for the business rules manager:

The server configures a client automatically while installing the business rules manager, but you must ensure that the Web browser is configured correctly for the business rules manager to work properly.

To ensure that the Web browser is configured correctly for the business rules manager, perform the following steps.

1. Make sure that scripting is enabled in the Web browser.

   The business rules manager requires scripting to function.

2. Make sure that cookies are enabled.

   When necessary, cookies are used to track the session when you are using the business rules manager. Therefore, enable cookies on your browser when tracking sessions. Contact your system administrator if you enable cookies.

Configuring the relationship service

After installing the product, you need to set the configuration properties for the relationship service.

Required security role for this task: When security and role-based authorization are enabled, you must be logged in as a configurator or an administrator to perform this task. Any WebSphere security role can view this configuration.

To set the data source and query block size (relationship instance count) properties for the relationship service, perform the following steps.

1. Ensure that the administrative console is running.

2. In the navigation pane, click **Integration Applications > Relationship Manager.**

3. Click **Relationship Services configuration**.

   The configuration tabbed page displays, showing the name and version (read-only) of the currently installed relationship service.

4. In the **Query block size (relationship instance count)** field, specify the maximum cache that the relationship service should set aside for relationship queries. This setting determines the size of the query results set. By default, 5000 relationship instances are read at once. This field controls the server size memory usage and provides the administrator with a level of control over how much memory resource is consumable by any given query.

5. In the **Data source** field, specify the default data source for the relationship service by entering the Java Naming and Directory Interface (JNDI) name of a data source defined at the cell level. This is where the tables for the relationship service are stored. Each relationship-related schema is created in this data source by default.

6. You then have the following options:
   - Click **OK** to save your changes and return to the previous page.
   - Click **Reset** to clear your changes and restore the currently configured values or most recently saved values.
   - Click **Cancel** to discard any unsaved changes on the page and return to the previous page.

Setting up the messaging server environment

Before running any XMS applications, including the sample applications provided with XMS, you must set up the messaging server environment.

The steps that you need to complete to set up the messaging server environment depend on the artifacts that an application connects to, and whether you are using the Message Service Client for .NET or the Message Service Client for C/C++. The steps are described in the documentation for the type of client.

- Setting up for Message Service Client for .NET
- Setting up for Message Service Client for C/C++

You can use the sample applications provided with the Message Service clients to verify your installation and messaging server setup. For more information about using the sample applications, see the following topics:

- Using .NET sample XMS applications
- Using C/C++ sample XMS applications

Configuring the JNDILookup web service

If you are using the administered JMS objects provided by IBM Business Process Manager with Message Service Clients for C/C++ and .NET, you must configure the JNDILookup web service that IBM Business Process Manager provides to enable non-Java clients to access administered JMS objects from a non-Java environment.

Before starting this task, make sure that the JNDILookup web service application has been installed.

Administratively-defined ConnectionFactory and Destination objects provide a separation between a JMS implementation and the JMS interfaces, which makes JMS client applications more portable since they are sheltered from the implementation details of a JMS provider. Administered objects enable an administrator to manage the connection settings for client applications from a central repository. For example, the specific queue that an application uses can be altered by changing the administered Destination object that the application obtains via JNDI.

Non-Java clients such as Message Service Clients for C/C++ and .NET can also use administered objects. However, since the administered JMS objects provided by IBM Business Process Manager are serialized Java objects accessed through JNDI, non-Java clients are not able to interpret them properly without the use of the JNDILookup web service. This web service provides a lookup operation that allows Message Service Clients for C/C++ and .NET to request the retrieval of a JNDI object by specifying the name of the object. The properties of the administered object are returned to the application using a map of name/value pairs.

Define the JNDILookup web service URL within the Message Service Client for C/C++ or Message Service Client for .NET application. To define the web service URL within an application, set the XMSC_IC_URL property of the InitialContext object to the web service endpoint URL. This property can alternatively be specified as an argument on constructing the InitialContext object.

Configuring extended messaging resources

Use the administrative console to configure resources needed by the extended messaging service and the applications that use the service. You can enable the extended messaging service, configure listener port extensions to handle late responses, and add or modify input and output ports for applications that use extended messaging.

Important: The Extended Messaging Service feature was deprecated in IBM Process Server 6.0.x and is no longer available for application use as of Process Server 6.2, except when managing any 6.0.x nodes that exist in a cell during migration. Replace any existing applications which depend on Extended Messaging services with ones that use standard JMS APIs, or equivalent messaging technologies. *Extended messaging* enables container-managed messaging. It extends the base Java Message Service (JMS) support, the Enterprise Java Bean (EJB) component model, and support for EJB 2.0 message-driven beans to allow use of the existing container-managed persistence and transactional behavior.

Extended messaging uses the bean-managed messaging implementation to provide the JMS interfaces, which ensures that both bean-managed and extended messaging use consistent JMS support. JMS usage is simplified since its support is managed by the extended messaging service.

For a complete description of extended messaging, see the following articles in the WebSphere Business Integration Server Foundation information center:
- Extended messaging: Overview
- Using extended messaging in applications

Enabling the Extended Messaging Service:

Enable the Extended Messaging Service to provide runtime support for container-managed messaging (extended messaging). Use the Extended Messaging Service page to specify whether this service starts automatically when the application server starts or whether it must be started manually.

Important: The Extended Messaging Service feature was deprecated in IBM Process Server 6.0.x and is no longer available for application use as of Process Server 6.2, except when managing any 6.0.x nodes that exist in a cell during migration. Replace any existing applications which depend on Extended Messaging services with ones that use standard JMS APIs, or equivalent messaging technologies.

Required security role for this task: When security and role-based authorization are enabled, you must log in as an administrator or configurator to perform this task.

To enable the Extended Messaging Service, perform the following steps.
1. Ensure that the administrative console is running.
2. Click **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Extended Messaging Service** to display the Extended Messaging Service page.

3. If you want to enable the Extended Messaging Service to start automatically with server startup, select the **Enable service at server startup** check box. If you want to start the service manually, ensure the check box is cleared.

4. Click **OK**.

5. When prompted, click **Save** on the console task bar to save your changes to the master repository.

6. If you are using the WebSphere MQSeries bindings transport in your configuration, set the value of the MQ_INSTALL_ROOT environment variable as follows:

   a. From within the administrative console, click **Environment** > **WebSphere Variables**.

   b. Click MQ_INSTALL_ROOT to display the configuration page for the environment variable.

   c. In the **Value** field, delete the default value (`${WAS_INSTALL_ROOT}/lib/WMQ`) and replace it with the explicit installation path (for example, `D:/IBM/WebSphereMQ` on a Windows system).

   d. Click **OK**.

7. Stop and restart the application server in order for the changes to take effect.

Configuring listener port extensions to handle late responses:

To enable a listener port to handle late responses, configure an extension that specifies how often the port checks for responses and how long it waits for those responses.

Important: The Extended Messaging Service feature was deprecated in IBM Process Server 6.0.x and is no longer available for application use as of Process Server 6.2, except when managing any 6.0.x nodes that exist in a cell during migration. Replace any existing applications which depend on Extended Messaging services with ones that use standard JMS APIs, or equivalent messaging technologies.

Late responses occur when the messaging infrastructure delays a response to a message sent by a sender bean, thereby preventing the application from receiving that response. Extended messaging can retrieve these late response messages and pass them to a message-driven bean provided by the application to handle late responses.

Required security role for this task: When security and role-based authorization are enabled, you must log in as an administrator or configurator to perform this task.

To create and enable a listener port extension that handles late responses, perform the following steps.

1. Ensure you have a listener port defined and configured, and that you have deployed the sender bean with the **Handle late responses** option enabled.

   Note: For more information about deploying a sender bean with this option enabled, refer to the WebSphere Business Integration Server Foundation Information Center.

2. From the administrative console, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Extended Messaging Service** > **Listener Port Extensions** .

3. From the Listener Port Extensions page, click **New** to create a new listener port extension.

4. From the New Listener Port Extension page, select the **Enabled** check box to enable the extension and late response handling.

5. In the **Request Interval** field, either accept the default value or specify a new value to indicate how often the listener port checks for late responses.

6. In the **Request Timeout** field, either accept the default value or specify a new value to indicate how long the listener port waits for a late response. The listener port discards any responses received after the specified timeout value.

7. Use the **Listener Ports** drop-down menu to specify the listener port to use for the extension.

8. Click **OK**.

9. When prompted, click **Save** on the console task bar to save your changes to the master repository.

10. Stop and restart the application server in order for the changes to take effect.

After you create a listener port extension, you can modify its configuration as necessary by using the Listener Port Extensions settings page.

Selecting extended messaging providers:

Select the extended messaging provider you want to administer by clicking the appropriate scope on the Extended Messaging Provider page. Each scope (cell, node, and server) that contains applications that use extended messaging has its own extended messaging provider to manage resources. You can create, modify or delete input ports, output ports, or other custom properties for each provider.

Important: The Extended Messaging Service feature was deprecated in IBM Process Server 6.0.x and is no longer available for application use as of Process Server 6.2, except when managing any 6.0.x nodes that exist in a cell during migration. Replace any existing applications which depend on Extended Messaging services with ones that use standard JMS APIs, or equivalent messaging technologies.

Required security role for this task: When security and role-based authorization are enabled, you must be logged in as administrator, operator, configurator, or monitor to perform this task.

To select the extended messaging provider you want to administer, perform the following steps.
1. From the administrative console, click **Resources > Extended Messaging Provider**.
2. From the Extended Messaging Provider page, select the appropriate scope for the extended messaging provider you want to administer.
   - **Cell**: The most general scope. Extended messaging resources defined at the cell scope are visible from all nodes and servers, unless they have been overridden.
   - **Node**: Extended messaging resources defined at the node scope override any duplicates defined at the cell scope. They are visible to all servers on the same node, unless they have been overridden at a server scope on that node.
   - **Server**: Extended messaging resources defined at the server scope override any duplicate definitions defined at the cell or parent node scope. They are visible only to a specific server.

   For detailed information about scopes, see the WebSphere Application Server Information Center.
3. Click **Apply**.

The administrative console updates the **Scope**, **Name**, and **Description** fields on the bottom of the page to reflect the values for the selected resource provider.

You can now create, modify or delete input ports, output ports, or other custom properties for the selected extended messaging provider.

Configuring input ports:

Use the administrative console to create new or modify existing input ports for each receiver bean that is constructed from a session bean. Input ports define properties for the receiving Java Message Service (JMS) destination, specify how to select and handle messages, and provide details for any required reply destinations.

Important: The Extended Messaging Service feature was deprecated in IBM Process Server 6.0.x and is no longer available for application use as of Process Server 6.2, except when managing any 6.0.x nodes that exist in a cell during migration. Replace any existing applications which depend on Extended Messaging services with ones that use standard JMS APIs, or equivalent messaging technologies.

You do not need to create input ports for receiver beans that are constructed from message-driven beans; the necessary details are associated with the deployed message-driven bean and the Message Listener Service.

Required security role for this task: When security and role-based authorization are enabled, you must be logged in as administrator or configurator to perform this task.

To add or modify an input port, perform the following steps.

1. From the administrative console, click **Resources > Extended Messaging Provider**.
2. From the Extended Messaging Provider page, select the appropriate scope for the resource provider you want to work with.
3. Click **Apply**.
4. Click **Input Ports** from the Additional Properties table.
5. From the Input Port collection page, do one of the following:
   - If you are creating a new input port, click **New**.
   - If you want to modify an existing input port, click the port name.
6. From the Input Port settings page, specify the appropriate properties for the input port.
7. Click **OK**.
8. When prompted, click **Save** on the console task bar to save your changes to the master repository.
9. Stop and restart the application server in order for the changes to take effect.

Input port settings:

When you create a new input port or modify an existing input port, you must specify certain properties. Use the information in this topic to determine whether a property is optional or required and what data type it accepts.

Important: The Extended Messaging Service feature was deprecated in IBM Process Server 6.0.x and is no longer available for application use as of Process Server 6.2, except when managing any 6.0.x nodes that exist in a cell during migration. Replace any existing applications which depend on Extended Messaging services with ones that use standard JMS APIs, or equivalent messaging technologies.

An input port has the following configuration properties:

Scope The scope at which the extended messaging provider is defined. The value represents the location of the configuration file. The administrative console automatically populates this field. You cannot edit the value.

Name The name of the input port, used for administrative purposes. This field requires a string value.

JNDI Name
The Java Naming and Directory Interface (JNDI) name for the input port. This field requires a string value.

Description
A description of the input port, used for administrative purposes. This field is optional, and it accepts a string value.

Category
A category string to use when classifying or grouping the resource. This field is optional, and it accepts a string with a maximum of 30 ASCII characters.

JMS Connection Factory JNDI Name
The JNDI name for the Java Message Service (JMS) connection factory used by the input port. This field requires a string value (for example, `jms/connFactory1`).

JMS Destination JNDI Name
The JNDI name for the JMS destination used by the input port. This field requires a string value (for example, `jms/destn1`).

JMS Acknowledgement Mode

The JMS mode that is used to acknowledge messages. This field is required for message-driven beans that use bean-managed transaction demarcation (in other words, the transaction type is set to `Bean`).

The following are valid values for this field:

- Auto Acknowledge: The session automatically acknowledges a message in either of the following cases:
  - When the session successfully returns from a call to receive a message
  - When the session calls a message listener to process the message and receives a successful response from that listener
- Dups OK Acknowledge: The session acknowledges only the delivery of messages. This can result in the delivery of duplicate messages if JMS fails.

The default mode is Auto Acknowledge.

Destination Type

The JMS resource type. This field requires one of the following values: :

- Queue: The receiver bean receives messages from a queue destination.
- Topic: The receiver bean receives messages from a topic destination.

The default value is Queue.

Subscription Durability

Specifies whether a JMS topic subscription is durable. This field is required if the JMS destination type is a topic. The following are valid values for this field:

- Durable: A subscriber registers a durable subscription with a unique identity that is retained by JMS. Subsequent subscriber objects with the same identity resume the subscription in the state in which it was left by the previous subscriber. If there is no active subscriber for a durable subscription, JMS retains the subscription's messages until they are received or they expire.
- NonDurable: Nondurable subscriptions last for the lifetime of their subscriber. A client sees the messages published on a topic only while its subscriber is active. If the subscriber is inactive, the client misses the messages published on its topic.

The default value is NonDurable.

Reply JMS Connection Factory JNDI Name

The JNDI name of the JMS connection factory that is used for replies. This field requires a string value (for example, `jms/connFactory1`).

Reply JMS Destination JNDI Name

The JNDI name of the JMS destination that is used for replies. This field requires a string value (for example, `jms/destn1`).

Configuring output ports:

Use the administrative console to create new or modify existing output ports for sender beans. Output ports specify the properties sender beans need to define the destinations for sent messages. They also specify optional properties when responses are expected. Output ports are associated with sender beans at deployment time.

Important: The Extended Messaging Service feature was deprecated in IBM Process Server 6.0.x and is no longer available for application use as of Process Server 6.2, except when managing any 6.0.x nodes that exist in a cell during migration. Replace any existing applications which depend on Extended Messaging services with ones that use standard JMS APIs, or equivalent messaging technologies.

Required security role for this task: When security and role-based authorization are enabled, you must be logged in as administrator or configurator to perform this task.

To add or modify an output port, perform the following steps.

1. From the administrative console, click **Resources > Extended Messaging Provider**.
2. From the Extended Messaging Provider page, select the appropriate scope for the extended messaging provider you want to modify.
3. Click **Apply**.
4. Click **Output Ports** from the Additional Properties table.
5. From the Output Port collection page, do one of the following:
   - If you want to add a new output port, click **New**.
   - If you want to modify an existing output port, click the port name.
6. From the Output Port settings page, specify the appropriate properties for the output port.
7. Click **OK**.
8. When prompted, click **Save** on the console task bar to save your changes to the master repository.
9. Stop and restart the application server in order for the changes to take effect.

Output port settings:

When you create a new output port or modify an existing output port, you must specify certain properties. Use the information in this topic to determine whether a property is optional or required and what data type it accepts.

Important: The Extended Messaging Service feature was deprecated in IBM Process Server 6.0.x and is no longer available for application use as of Process Server 6.2, except when managing any 6.0.x nodes that exist in a cell during migration. Replace any existing applications which depend on Extended Messaging services with ones that use standard JMS APIs, or equivalent messaging technologies.

An output port has the following configuration properties:

Scope The extended messaging provider scope; the value represents the location of the configuration file. The administrative console automatically populates this field. You cannot edit the value.

Name The name of the output port, used for administrative purposes. This field requires a string value.

JNDI Name

The Java Naming and Directory Interface (JNDI) name for the output port. This field requires a string value.

Description

A description of the output port, used for administrative purposes. This field is optional, and it accepts a string value.

Category

A category string to use when classifying or grouping the resource. This field is optional. It accepts a string value with a maximum of 30 ASCII characters.

JMS Connection Factory JNDI Name

The JNDI name for the Java Message Service (JMS) connection factory used by the output port. This field requires a string value (for example, `jms/connFactory1`).

JMS Destination JNDI Name

The JNDI name for the JMS destination used by the output port. This field requires a string value (for example, `jms/destn1`).

JMS Delivery Mode

The JMS mode used to deliver messages. You must select one of the following values for this field:

- Persistent: Messages put onto the destination are persistent.
- Nonpersistent: Messages put onto the destination are not persistent.

The default value is Persistent.

JMS Priority

The message priority for the queue destination. This field requires an integer value from 0 to 9. The default value is 4.

JMS Time To Live

The time, in milliseconds, a message remains in the queue. After the specified time elapses, the message expires.

This field requires an integer with a value from 0 to n:

- 0: Messages never time out.
- n: Messages time out after n milliseconds.

The default value is 0.

JMS Disable Message I.D.

Specifies whether the system generates a JMS message ID. This is a required field; select one of the following values:

- Selected: The system does not generate JMS message IDs.
- Cleared: The system generates JMS message IDs automatically.

By default, JMS message IDs are generated.

JMS Disabled Message Timestamp

Specifies whether the system generates a JMS message timestamp. This is a required field; select one of the following values:

- Selected: The system does not add message timestamps to sent messages.
- Cleared: The system automatically adds message timestamps to sent messages.

By default, the system adds message timestamps to sent messages.

Response JMS Connection Factory JNDI Name

The JNDI name of the JMS connection factory that is used for responses handled by the output port. This field requires a string value (for example, `jms/connFactory1`).

Response JMS Destination JNDI Name

The JNDI name of the JMS destination that is used for responses handled by the output port. This field requires a string value (for example, `jms/destn1`).

Configuring a CEI database

You can configure a Common Event Infrastructure (CEI) database manually and use the CEI functionality for IBM Business Process Manager.

The procedure in this topic to describes how to configure a CEI database for use with IBM Business Process Manager.

1. To create the data store for the CEI event service, run the appropriate command:
   - configEventServiceDB2DB
   - configEventServiceDB2ZOSDB
   - configEventServiceOracleDB
   - configEventServiceSQLServerDB

   Important: Do not create an event service data store for production environments because the performance of persisting events may be impacted.

2. After generating the database scripts, save your changes using **$AdminConfig save**. In addition to generating the database scripts, the commands create JDBC resources for the CEI event service to use.

3. Copy the scripts that you generated to the database server. The directory location for the scripts depends on the scope where the CEI is deployed.

In a cluster scope, the directory location would be as follows:

profile_root/databases/event/*<cluster_name>*/dbscripts/*<database_type*

In a server scope, the directory location would be as follows:

profile_root/databases/event/*<node_name>*/*<server_name>*/dbscripts/*<database_type*

Where *profile_root* is one of the following

- For AIX: **/usr/IBM/WebSphere/AppServer/profiles/profile_name**
- For Linux: **/opt/IBM/WebSphere/AppServer/profiles/profile_name**
- For Solaris: **/opt/IBM/WebSphere/AppServer/profiles/profile_name**
- For Windows: **C:\Program Files\IBM\WebSphere\AppServer\profiles\profile_name**

For details on default directory conventions, see Default installation directories for the product and profiles

4. Log into the database server as a user with read and write access on the database. Open a command prompt and initialize the command line interface for the database software. To create the event database, run the script for your database type (for example **cr_event_db2 server** *<db2_user>*).

Continue configuring IBM Business Process Manager components.

Related concepts:

"Planning to configure the Common Event Infrastructure database" on page 70
The Common Event Infrastructure (CEI) database specifications list the types of supported databases, script locations, profile configuration types, and necessary user ID privileges. You can optionally use the CEI database to store events that are captured when it is monitoring IBM Business Process Manager.

Configuring IBM Business Process Manager widgets for WebSphere Portal

Your IBM Business Process Manager widgets can be displayed in WebSphere Portal.

To display widgets in WebSphere Portal, complete the following high-level steps:

1. Configure Business Space.
2. Configure widgets to work with WebSphere Portal.

Configuring Common Event Infrastructure

You can configure Common Event Infrastructure resources, or change existing resources, using the server AdminTask object

Use the administrative console to configure CEI when you are installing it in a network deployment environment or in a cluster or in a stand-alone server configuration.

You can also use the wsadmin command to configure CEI, or you can use the command to alter an existing CEI configuration. In either case, you would change the configuration of CEI by using the server AdminTask object to run administrative commands.

After changing CEI configuration, you must restart the server or cluster.

Common Event Infrastructure components:

Common Event Infrastructure components are installed as a set of applications, services, and resources on the server.

When you configure Common Event Infrastructure, a number of components are created and deployed on your server.

Common Event Infrastructure service

A service installed into the server, that enables applications and clients to use Common Event Infrastructure. You can view the configuration of the Common Event Infrastructure service in the administrative console, as follows:

- For a server, click **Servers** > **Application Servers** > *server_name* > **Business Integration** > **Common Event Infrastructure** > **Common Event Infrastructure Service**.

- For a cluster, click **Servers** > **Clusters** > *cluster_name* > **Business Integration** > **Common Event Infrastructure** > **Common Event Infrastructure Service**.

If the check box labeled Enable the event infrastructure server is selected, then the service is installed and running or it will start after you restart your server or cluster. If it is cleared, then the service is not installed or will be uninstalled after you restart your server or cluster

Event service settings

A set of properties used by the event service that enable event distribution and persistence using the data store. Typically, no configuration is necessary for this resource, but you might need to create additional event service settings if you want to set up multiple event services in the same cell. To view the event service settings, click **Service integration** > **Event service** > **Event service settings**.

Event messaging configuration

The resources that support asynchronous event transmission to the event service using the Java Messaging Service (JMS). The default messaging configuration uses the server embedded messaging. You can optionally configure an external JMS provider for event messaging.

Event database

The event database is used to persistently store events received by the event service. You can configure an external event database on the following products: DB2, Oracle, and SQLServer.

Event filter plug-in

A filter plug-in is used to filter events at the source using XPath event selectors. To configure the filter properties, click **Service Integration** > **Common Event Infrastructure** > **Event Emitter Factories** > **Event Filter Settings**.

Emitter factory

An emitter factory is an object used by event sources to create emitters; an emitter is used to send events to the event service. The properties of an emitter factory affect the behavior of any emitter that is created using that emitter factory. To view the available emitter factories, click **Service Integration** > **Common Event Infrastructure** > **Event Emitter Factories**.

Event service transmission

An event service transmission is an object defining properties that determine how emitters access the event service synchronously using EJB calls; these properties are used by emitter factories when creating new emitters. You can view or change the available event service transmissions from the emitter factory settings.

JMS transmission

A JMS transmission is an object that defines properties that determine how emitters access the event service asynchronously using a JMS queue; these properties are used by emitter factories when creating new emitters. You can view or change the available JMS transmissions from the emitter factory settings.

Event group

An event group is a logical collection of events used to categorize events according to their content. When querying events from the event service or subscribing to event distribution, an event consumer can specify an event group to retrieve only the events in that group. Event groups can also be used to specify which events should be stored in the persistent data store. To view the available event groups in the administrative console, click **Service integration** > **Common Event Infrastructure** > **Event service** > **Event services** > *event_service* > **Event groups**.

Configuring the Common Event Infrastructure using the administrative console:

ConfigureCommon Event Infrastructure by using the server administrative console.

Open the Common Event Infrastructure Server panel of administrative console:

If you are configuring a server, select **Servers > Server Types > WebSphere application servers >** *server_name* **> Business Integration > Common Event Infrastructure > Common Event Infrastructure Server**.

If you are configuring a cluster, click **Servers > Clusters > WebSphere application server clusters >** *cluster_name* **> Business Integration > Common Event Infrastructure > Common Event Infrastructure Server**.

1. Enable the deployment of the Common Event Infrastructure enterprise application by selecting the check box labeled **Enable the event infrastructure server**. If the server has already been configured, then you can enable or disable it by selecting or clearing the check box. If the enable check box is cleared then Common Event Infrastructure has not been configured, or has had a previous configuration disabled but the server has not been restarted. An information message shows you whether this deployment target has Common Event Infrastructure configured. If the server has already been configured, you can change the data source settings for the event database, the message store, or both.

   Note: If you select the check box to enable the Common Event Infrastructure server and the server has not yet been configured, then the parameters shown is used to configure it unless you change them.

   - If you are performing the configuration the first time, then the event data source tables are created on the common database. If there is already a Common Event Infrastructure server configuration, then you need to create a database.
   - The messaging service is created under a unique schema under the common database.

   When the server/cluster on which Common Event Infrastructure has been configured is restarted, then the new changes take effect.

2. Configure (or change the current settings for an existing configuration of) the event database by using one of the following methods to populate the fields with the appropriate settings.

   - Click **Edit** for a database configuration panel with a more extensive list of options than the ones listed on the panel.
   - Use the fields on the panel to enter the information:
   a. **Database name** – the name of the database you use to store events.
   b. **Create Tables** – select this check box if you want to create the database tables on the event database.

      Note: If you are configuring Common Event Infrastructure to use a database on another server, then you are not be able to create the tables using this control. Instead, you will have to use the database scripts that will be generated after you complete the rest of this configuration. In this case, you can click **Edit** to show the data source detail panel, which tells you the location of the database creation scripts.

   c. **Username** and **Password** – for authenticating into the event database.
   d. **Server** – name of the server where the event database is located.
   e. **Provider** – choose a provider for your database from the menu.

      Note: The **Schema** field is activated if the database is created using DB2 on the z/OS platform. In all other cases, the schema field is disabled.

      Important: If the tables exist on the target database, then the configuration can fail.

3. Select whether the Common Event Infrastructure bus is to be**Local** on the server, or **Remote** and reside on another server. If you choose remote, then select the remote location from the menu or click **New** to create a new remote bus.

4. Configure Common Event Infrastructure support for messaging.

   - Click Edit for a database configuration panel with a more extensive list of options than the ones listed on the panel.
   - Use the fields on the panel to enter the information:

   a. **Database name** – enter the name of the database you use to store messages.

   b. **Schema** – enter a name for the schema, or accept the default name given.

   c. **Username** and **Password** – for authenticating into the messaging database.

   d. **Server** – name of the server where the messaging database is located.

   e. **Provider** – choose a provider for your database from the menu.

5. Create a messaging authentication alias for the Common Event Infrastructure bus.

   a. Select **Additional Properties > JMS Authentication Alias**.

   b. Enter the user ID and password you use for secure communications across the System Integration Bus. You can accept the default configured values of "CEI" for both the user ID and password if security is disabled. If security has been enabled, then enter the user ID and password used for the bus authentication. In a production environment, you would select your own user ID and password to secure the system.

   c. Click **OK**.

6. Click **OK** or **Apply**.

7. Restart your server or cluster.

All the major parts of Common Event Infrastructure are now configured and running on your server or cluster. The configuration includes the event data store, the messaging engine, and the event application. This single panel can be used in place of many commands and steps you would otherwise use to configure Common Event Infrastructure.

After you have restarted your server or cluster, you will be able to store service component events that are emitted from your applications. You can now change the runtime properties of the Common Event Infrastructure server by selecting the **Common Event Infrastructure Destination** panel. You can choose whether to start the Common Event Infrastructure server at startup, and specify the emitter factory JNDI name where the events are sent.

Deploying the Common Event Infrastructure application:

Before you can use Common Event Infrastructure, you must first deploy the event service and associated resources in the server runtime environment.

The Common Event Infrastructure enterprise application includes the runtime components of the event service and the default messaging configuration used for asynchronous event submission.

To deploy the event service:

From the wsadmin tool, run the **deployEventService** administrative command in batch or interactive mode. The parameters of the **deployEventService** administrative command are as follows:

nodeName
   The name of the node where the event service to be deployed. This parameter is optional; if you do not specify a node name, the default is the current node. If you specify a node name, then you must also specify the server name using the **serverName** parameter. This parameter is not valid if you are deploying the event service in a cluster.

serverName
The name of the server where the event service to be deployed. This parameter is required only if you specify a node; it is not valid if you are deploying the event service in a cluster.

clusterName
The name of the cluster where the event service to be deployed. This parameter is optional and must not be specified if you are deploying at the node or server scope.

enable
Indicates whether the event service to be started automatically when the server starts. The default value is **true**.

After the administrative command completes, the Common Event Infrastructure event service and default messaging configuration are deployed at the specified scope.

If WebSphere security is enabled, you must also configure the JMS authentication alias and password using the **setEventServiceJmsAuthAlias** administrative command.

If you are deploying the event service in a cluster, you must also manually configure the event database.

Deploying Common Event Infrastructure in a cluster:

There are several ways you can deploy Common Event Infrastructure resources in a cluster environment.

Deploying Common Event Infrastructure in an existing cluster:

You can deploy the event service application in an existing cluster.

Deploying the event service application in a cluster is essentially the same as deploying the application on a stand-alone server. However, in a cluster environment, no default event database is configured.

To deploy and configure Common Event Infrastructure in a cluster environment:
1. Run the **deployEventService** administrative command as you would for a stand-alone server, but specifying the name of the cluster. Use the clusterName parameter to specify the cluster.
2. On the deployment manager system, run the database configuration administrative command. Specify the cluster name using the clusterName parameter. This command generates the database configuration script.
3. Copy the generated database configuration script to the database system.
4. Run the database configuration script on the database system to create the event database.
5. On the deployment manager system, run the **enableEventService** command to enable the event service. Use the clusterName parameter to specify the name of the cluster.

Creating a cluster by converting an existing Common Event Infrastructure server:

You can create a cluster by converting an existing stand-alone server that is already configured with Common Event Infrastructure.

Before you can convert the existing server, make sure that it is fully configured for Common Event Infrastructure. The configuration includes deploying the event service application and configuring the event database.

To create the cluster:
1. Follow the typical WebSphere process for converting a stand-alone server into the first member of a new cluster. When the server is converted, the following steps take place:

- Common Event Infrastructure resources available at the scope of the server are moved to the new cluster scope.

    Default database: If the existing server was configured with a non-supported database, the database resources are not moved to the cluster scope. Instead, these resources are removed. In this situation, the event service in the cluster is disabled by default.
    - The deployed event service application target list is modified to remove the converted server and add the new cluster.
2. Optional: If the converted server was configured with a non-supported database, you must configure a new event database for the cluster and then enable the event service:
    a. On the deployment manager system, run the database configuration administrative command. Specify the cluster name using the clusterName parameter. This command generates the database configuration script.
    b. Copy the generated database configuration script to the database system.
    c. Run the database configuration script on the database system to create the event database.
    d. On the deployment manager system, run the **enableEventService** command to enable the event service. Use the clusterName parameter to specify the name of the cluster.

Creating a cluster by using an existing Common Event Infrastructure server as a template:

You can create a cluster by specifying an existing Common Event Infrastructure server as a template.

Before you can create a cluster using this method, you must have an existing server that is fully configured for Common Event Infrastructure. The configuration includes deploying the event service application and configuring the event database.

To create the cluster:
1. Follow the typical WebSphere process for creating new cluster, using the existing Common Event Infrastructure server as a template for the first cluster member. When the first member is created, the following steps take place:
    - Common Event Infrastructure resources available at the scope of the existing server are copied to the new cluster scope.

    Default database: If the existing server was configured with a non-supported database, the database resources are not copied to the cluster scope. The default database configuration is not supported in a cluster. In this situation, the event service in the cluster is disabled by default.
    - The deployed event service application target list is modified to include the new cluster.
2. Optional: If the existing server was configured with a non-supported database, you must configure a new event database for the cluster and then enable the event service:
    a. On the deployment manager system, run the database configuration administrative command. Specify the cluster name using the clusterName parameter. This command generates the database configuration script.
    b. Copy the generated database configuration script to the database system.
    c. Run the database configuration script on the database system to create the event database.
    d. On the deployment manager system, run the **enableEventService** command to enable the event service. Use the clusterName parameter to specify the name of the cluster.

Configuring event messaging:

You can modify the messaging configuration used for JMS transmission of events to the event service.

You will create the messaging infrastructure for Common Event Infrastructure when you use the administrative console panel to configure Common Event Infrastructure on a server. Generally, the

messaging configuration will use the default messaging provider and create a single JMS queue for asynchronous transmission of events to the event service. You can, if necessary, modify this messaging configuration.

Configuring additional JMS queues:

If you are using the default event messaging configuration, you can add additional JMS queues for transmission of events to the event service.

To configure additional JMS queues to use the default messaging configuration, you can set up multiple JMS queues that are routed to the service integration bus queue destination. The Common Event Infrastructure service integration bus queue destination depends upon the scope at which the event service is deployed:

Scope	Service integration bus queue destination
Server	*node.server*.CommonEventInfrastructureQueueDestination
Cluster	*cluster*.CommonEventInfrastructureQueueDestination

Configuring event messaging using an external JMS provider:

If you do not want to use the default embedded messaging configuration for event transmission, you can configure asynchronous message transport to use an external Java Messaging Service (JMS) provider.

Before you can configure event messaging using an external JMS provider, you must first create a JMS queue and connection factory using the appropriate interfaces for your JMS provider. You must also create a listener port or activation specification.

To configure event messaging using an external JMS provider:

From the wsadmin tool, run the **deployEventServiceMdb** administrative command in batch or interactive mode. The parameters of the **deployEventServiceMdb** command are as follows:

applicationName
The application name of the event service message-driven bean to be deployed. This parameter is required.

nodeName
The name of the node where the event service message-driven bean is to be deployed. If you specify a node name, you must also specify a server name. The node name is an optional parameter; the default value is the current node. Do not specify this parameter if you are deploying the application in a cluster.

serverName
The name of the server where the event service message-driven bean is to be deployed. This parameter is required if you are deploying the application at server scope; otherwise it is optional. Do not specify a server name if you are deploying the application in a cluster.

clusterName
The name of the cluster where the event service message-driven bean is to be deployed. Specify this parameter only if you are deploying the application in a cluster.

listenerPort
The name of the listener port used by the event service message-driven bean to publish events. The specified listener port must exist. You must specify either a listener port or an activation specification, but not both.

activationSpec

The JNDI name of the activation specification used by the event service message-driven bean to publish events. The specified activation specification must exist. You must specify either a listener port or an activation specification, but not both.

qcfJndiName

The JNDI name of the JMS queue connection factory to be used by the event service message-driven bean. This parameter is required if you specify an activation specification; otherwise it is optional. If you specify a queue connection factory and a listener port, the queue connection factory must match the one configured for the listener port.

The **deployEventServiceMdb** administrative command deploys the message-driven bean for the event service, configured for the specified listener port or activation specification. It also creates an emitter factory and JMS transmission using the external JMS configuration. Applications can use either the default emitter factory (which is configured to use the default messaging configuration) or the new emitter factory (which uses the external JMS provider).

If you want to set up more than one JMS queue to the event service, you can run this command multiple times, specifying different enterprise application names and JMS queues. Each time you run the script, it deploys an additional message-driven bean and configures new resources to use the specified JMS queue.

Configuring the JMS authentication alias:

If WebSphere security is enabled and you want to use asynchronous JMS messaging to submit events to the event service, you must configure the JMS authentication alias.

To configure the JMS authentication alias:

From the wsadmin tool, run the **setEventServiceJmsAuthAlias** administrative command in batch or interactive mode. The parameters of the **setEventServiceJmsAuthAlias** command are as follows:

userName

The name of the user to be used for the JMS authentication alias. This parameter is required.

password

The password of the user to be used for the JMS authentication alias. This parameter is required.

nodeName

The name of the node where you want to update or create the JMS authentication alias. If you specify a node name, you must also specify a server name. Do not specify a node name if you are configuring the authentication alias in a cluster.

serverName

The name of the server where you want to update or create the JMS authentication alias. This parameter is required only if you specify a node; it is not valid if you are configuring the authentication alias in a cluster.

clusterName

The name of the cluster where you want to update or create the JMS authentication alias. Specify this parameter only if you are configuring the authentication alias in a cluster; if you specify a cluster name, do not specify a node or server name.

The JMS authentication alias used by the event service objects is updated at the specified scope; if the authentication does not exist, it is created using the specified values.

Configuring the event database:

You can configure the event data source using commands that are specific for each supported database product.

The event database is required to support persistence of events. If you did not use the Common Event Infrastructure configuration panel in the administrative console, you still have the option of creating the event database by using the commands described here.

Event database limitations:

Some limitations apply to configurations of the event database using certain database software.

Refer to the following table to see which limitations might apply to your environment.

Table 184. Event database limitations

Database type	Limitations
Oracle	• The Oracle 11 JDBC thin driver imposes some size restrictions for string values if you are using a Unicode character set. You may receive an Oracle ORA-01461 error when events containing large values (such as a long message attribute) are stored in the event database. For more information about this restriction, refer to the Oracle 11 documentation. To avoid this problem, use the Oracle 11 OCI driver or the Oracle 11 thin driver. • Oracle database software treats a blank string as a NULL value. If you specify a blank string as an event attribute value, that string is converted to a NULL when it is stored in an Oracle event database.
SQL Server	• The SQL Server database must be configured to use mixed authentication mode. Trusted connections are not supported. • The XA stored procedures must be installed. These stored procedures are provided with the JDBC driver from Microsoft Corporation. • The sqljdbc.dll file must be available in a directory specified on the PATH statement. This file is provided with the JDBC driver from Microsoft Corporation. • The Distributed Transaction Coordinator (DTC) service must be started.

Configuring a DB2 event database (Linux, UNIX, and Windows systems):

You can configure an external event database using DB2 Universal Database on a Linux, UNIX, or Windows system.

To configure a DB2 event database on a Linux, UNIX, or Windows system:
1. Start the wsadmin tool.
2. Use the AdminTask object to run the **configEventServiceDB2DB** administrative command in batch or interactive mode. The minimum required parameters of the **configEventServiceDB2DB** command are as follows:

   createDB
   > Indicates whether the administrative command creates and run the database configuration scripts. Specify **true** or **false**. If this parameter is set to **false**, the scripts are created but are not run. You must then run the database configuration scripts to complete the database configuration.

nodeName

The name of the node that contains the server where the event service data source is created. If you specify a node name, you must also specify a server name. You must specify one of the following:

- Node name and server name
- Cluster name

serverName

The name of the server where the event service data source is created.

clusterName

The name of the cluster where the event service data source is created. If you specify a cluster name, do not specify node and server names.

jdbcClassPath

The path to the JDBC driver. Specify only the path to the driver file; do not specify the file name.

dbHostName

The host name of the server where the database is installed.

dbUser

The DB2 user ID to use when creating the event database. The specified user ID must have sufficient privileges to create and drop databases.

dbPassword

The DB2 password to use.

Other parameters might be required for your environment. For a complete list of parameters and usage information, refer to the help for the **configEventServiceDB2DB** administrative command.

The administrative command creates the required data source at the specified scope; if you specified **true** for the createDB parameter, the command also runs the generated database configuration script to create the database.

The generated database configuration scripts are stored by default in the *profile_root*/databases/event/ *node/server*/dbscripts/db2 directory. (In a Network Deployment environment, these scripts are stored under the deployment manager profile directory.) If you specified a value for the optional outputScriptDir parameter, the scripts are stored in that location instead. You can use these scripts to manually configure the event database at any time.

Configuring a DB2 database on a z/OS system:

You can configure an event database on a z/OS system using DB2 database software.

To configure the DB2 database from a remote client, you must have the DB2 Connect product installed with the latest fix packs.

To configure the event database:

1. `Linux` `UNIX` `Windows` If you are configuring the z/OS event database from a Linux, UNIX, or Windows client system, follow these steps to create and catalog the database:

   a. On the z/OS system, use the DB2 administration menu to create a subsystem.

   b. Optional: Create the storage group you want to use for the event database. You can also use an existing storage group (for example, **sysdeflt**).

   c. Enable the 4 K, 8 K, and 16 K buffer pools you want to use for the event database.

   d. Grant the necessary permissions to the user ID you want the data source to use. This user ID must have rights to access the database and storage group you created; it must also have permission to create new tables, table spaces, and indexes for the database.

e. Catalog the remote database. Run the following commands, either in a script or in a DB2 command-line window:

```
catalog tcpip node zosnode remote hostname server IP_port
    system db_subsystem
catalog database db_name as db_name at node zosnode authentication DCS
```

For more information about how to catalog a node and its databases, refer to the DB2 Connect documentation.

f. Verify that you can establish a connection to the remote subsystem. You can run the following command to perform the verification:

```
db2 connect to subsystem user userid using password
```

g. Bind to the host database. Run the following commands:

```
db2 connect to db_name user userid using password
db2 bind db2_root/bnd/@ddcsmvs.lst blocking all sqlerror continue message
    mvs.msg grant public
db2 connect reset
```

For more information about binding a client to a host database, refer to the DB2 Connect documentation.

2. On the WebSphere system, start the wsadmin tool.

3. Use the AdminTask object to run the **configEventServiceDB2ZOSDB** administrative command in batch or interactive mode. The minimum required parameters of the **configEventServiceDB2ZOSDB** command are as follows:

createDB

> Linux   UNIX   Windows   Indicates whether the administrative command creates and runs the database configuration scripts. This parameter applies only if you are running the administrative command from a Linux, UNIX, or Windows client system. Specify **true** or **false**.
>
> If this parameter is set to **false**, or if you are running the command on the z/OS system, the scripts are created but are not run. You must then run the database configuration scripts to complete the database configuration.

nodeName

> The name of the node that contains the server where the event service data source is created. If you specify a node name, you must also specify a server name. You must specify one of the following:
> - Node name and server name
> - Cluster name

serverName

> The name of the server where the event service data source is created.

clusterName

> The name of the cluster where the event service data source is created. If you specify a cluster name, do not specify node and server names.

jdbcClassPath

> The path to the JDBC driver. Specify only the path to the driver file; do not specify the file name.

dbHostName

> The host name of the server where the database is installed.

dbUser

> The DB2 user ID to use when creating the event database. The specified user ID must have sufficient privileges to create and drop databases.

dbPassword

> The DB2 password to use.

dbPort
　　The DB2 instance port.

dbSubSystemName
　　The name of the database subsystem.

storageGroup
　　The storage group for the event database and the event catalog database.

eventDBName
　　The event database name to be created.

eventCatalogDBName
　　The event catalog database to be created.

bufferPool4K
　　The name of the 4K buffer pool.

bufferPool8K
　　The name of the 8K buffer pool.

bufferPool16K
　　The name of the 16K buffer pool.

Other parameters might be required for your environment. For a complete list of parameters and usage information, refer to the help for the **configEventServiceDB2ZOSDB** administrative command.

The administrative command creates the required data source at the specified scope; if you are running the command on a Linux, UNIX, or Windows DB2 client and you specified **true** for the createDB parameter, the command also runs the generated database configuration script to create the database. On a z/OS system, you must use the SQL Processor Using File Input (SPUFI) facility to run the generated DDL files. The DDL files are stored in the *profile_root*/databases/event/*node*/*server*/db2zos/ddl directory.

The generated database configuration scripts are stored by default in the *profile_root*/databases/event/*node*/*server*/dbscripts/db2zos directory. (In a Network Deployment environment, these scripts are stored under the deployment manager profile directory.) If you specified a value for the optional outputScriptDir parameter, the scripts are stored in that location instead. You can use these scripts to manually configure the event database at any time.

After you have finished configuring the database, you can use the server administrative console to test the database configuration. To perform this task, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Configuring an Oracle event database:

You can configure an external event database using Oracle Database on a Linux, UNIX, or Windows system.

Before you configure an Oracle event database, you must first create the database. The Oracle SID must already exist before you run the event database configuration command. The default SID for the event database is **event**.

To configure an Oracle event database:
1. Start the wsadmin tool.
2. Use the AdminTask object to run the **configEventServiceOracleDB** administrative command in batch or interactive mode. The minimum required parameters of the **configEventServiceOracleDB** command are as follows:

createDB

Indicates whether the administrative command should create and run the database configuration scripts. Specify **true** or **false**. If this parameter is set to **false**, the scripts are created but are not run. You must then run the database configuration scripts to complete the database configuration.

nodeName

The name of the node that contains the server where the event service data source should be created. If you specify a node name, you must also specify a server name. You must specify one of the following:

- Node name and server name
- Cluster name

serverName

The name of the server where the event service data source should be created.

clusterName

The name of the cluster where the event service data source should be created. If you specify a cluster name, do not specify node and server names.

jdbcClassPath

The path to the JDBC driver. Specify only the path to the driver file; do not specify the file name.

oracleHome

The ORACLE_HOME directory. This parameter is required only if you specified **true** for the createDB parameter.

dbPassword

The password to use for the schema user ID created during the database configuration (the default user ID is **ceiuser**. This password is used to authenticate the Oracle database connection.

sysUser

The Oracle SYSUSER user ID. This user ID must have SYSDBA privileges.

sysPassword

The password for the specified SYSUSER user ID.

Other parameters might be required for your environment. For a complete list of parameters and usage information, refer to the help for the **configEventServiceOracleDB** administrative command.

The administrative command creates the required data source at the specified scope; if you specified **true** for the createDB parameter, the command also runs the generated database configuration script to create the database.

The generated database configuration scripts are stored by default in the *profile_root*/databases/event/ *node*/*server*/dbscripts/oracle directory. (In a Network Deployment environment, these scripts are stored under the deployment manager profile directory.) If you specified a value for the optional outputScriptDir parameter, the scripts are stored in that location instead. You can use these scripts to manually configure the event database at any time.

Configuring a SQL Server event database:

You can configure an external event database using Microsoft SQL Server Enterprise on a Windows system.

To configure a SQL Server event database:

1. On the SQL Server database server system, create the directory used to contain the database files. By default, the files are written to the c:\program files\ibm\event\ceiinst1\sqlserver_data directory. If you need to specify a different location, you must edit the generated database configuration script to modify the value of the ceiInstancePrefix parameter, and then run the script manually.
2. On the server system, start the wsadmin tool.

3. Use the AdminTask object to run the **configEventServiceSQLServerDB** administrative command in batch or interactive mode. The minimum required parameters of the **configEventServiceSQLServerDB** command are as follows:

createDB
Indicates whether the administrative command should create and run the database configuration scripts. Specify **true** or **false**. If this parameter is set to **false**, the scripts are created but are not run. You must then run the database configuration scripts to complete the database configuration.

nodeName
The name of the node that contains the server where the event service data source should be created. If you specify a node name, you must also specify a server name. You must specify one of the following:
- Node name and server name
- Cluster name

serverName
The name of the server where the event service data source should be created. If you specify a server name, you must also specify a node name.

clusterName
The name of the cluster where the event service data source should be created. If you specify a cluster name, do not specify node and server names.

dbServerName
The server name of the SQL Server database. This parameter is required only if you specified **true** for the createDB parameter.

dbHostName
The host name of the server where the SQL Server database is running.

dbPassword
The password to use for the user ID created to own the event database tables (the default user ID is ceiuser). The WebSphere data source uses this password to authenticate the SQL Server database connection.

saUser
A user ID with privileges to create and drop databases and users. This parameter is required only if you specified **true** for the createDB parameter.

saPassword
The password for the specified SA user.

Other parameters might be required for your environment. For a complete list of parameters and usage information, refer to the help for the **configEventServiceSQLServerDB** administrative command.

The administrative command creates the required data source at the specified scope; if you specified **true** for the createDB parameter, the command also runs the generated database configuration script to create the database.

The generated database configuration scripts are stored by default in the *profile_root*/databases/event/*node*/*server*/dbscripts/dbscripts/sqlserver directory. (In a Network Deployment environment, these scripts are stored under the deployment manager profile directory.) If you specified a value for the optional outputScriptDir parameter, the scripts are stored in that location instead. You can use these scripts to manually configure the event database at any time.

Manually running database configuration scripts:

You can manually run the scripts generated by the database configuration administrative commands at any time.

Database configuration is a two-step process. The database configuration administrative command first generates a database-specific script for your environment; this generated script then configures the event database and data sources. If you specify **true** for the createDB parameter when running the administrative command, both steps happen automatically.

However, if you specify **false** for the createDB parameter, you must complete the database configuration by manually running the generated script on the target system. You might need to run the script manually in any of the following situations:

- You need to configure the event database on a different system from the one where you ran the administrative command.
- You need to re-create the event database at a later time.
- You need to modify the default options used by the generated script before running it.

Manually creating a DB2 event database on a Linux, UNIX, or Windows system:

Manually generate a database configuration script for a DB2 event database on a Linux, UNIX, or Windows server using the **cr_event_db2** command.

Manually run the generated database configuration script for a DB2 event database on a Linux, UNIX, or Windows system by completing the following steps:

1. On the server system, go to the directory containing the generated script. The default location is the `profile_root/databases/event/node/server/`dbscripts/db2 directory. If you specified a value for the **outputScriptDir** parameter of the database configuration administrative command, the scripts are stored in that location instead.

2. Using an ASCII text editor, make any required modifications to the configuration script. The name of the script varies depending upon the operating system in use:

   - Windows **cr_event_db2.bat**

   - Linux UNIX **cr_event_db2.sh**

3. Run the database creation script using the following syntax (remember to specify the file extension, if applicable):

   `cr_event_db2 [client|server] db_user [db_password]`

   The parameters are as follows:

   client|server
   Indicates whether the database is a client or server. You must specify either **client** or **server**.

   db_user
   The database user ID. This parameter is required.

   db_password
   The password for the database user. If you do not specify a password for a client database, you are prompted for it.

   For example, the following command would create the DB2 event database for a client database, using the user ID **db2admin** and the password **mypassword**:

   `cr_event_db2 client db2admin mypassword`

4. Restart the server. For a federated node, you must also stop and restart the node agent using the **stopNode** and **startNode** commands.

After you finish configuring the database, you can use the administrative console to test the database configuration. To do this, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Manually creating a DB2 event database on a z/OS system:

Manually generate a database configuration script for a DB2 event database on a z/OS system using a Linux, UNIX, or Windows client system using the **cr_event_db2zos** command.

Manually run the generated database configuration script for a DB2 event database on a z/OS system using a Linux, UNIX, or Windows client system by completing the following steps:

1. On the server system, go to the directory containing the generated script. The default location is the *profile_root*/databases/event/node/server/dbscripts/db2 directory. If you specified a value for the **outputScriptDir** parameter of the database configuration administrative command, the scripts are stored in that location instead.

2. Using an ASCII text editor, make any required modifications to the configuration script. The name of the script varies depending upon the operating system in use:

   - Windows **cr_event_db2zos.bat**

   - Linux UNIX **cr_event_db2zos.sh**

3. Run the database creation script using the following syntax (remember to specify the file extension, if applicable):

   cr_event_db2zos [dbName=*db_name*] *db_user* [*db_password*]

   The parameters are as follows:

   db_name
   > The database name to use. This parameter is optional; if you do not specify a database name, a name is generated.

   db_user
   > The database user ID to use. This parameter is required.

   db_password
   > The password for the database user. If you do not specify the password, the DB2 database prompts you for it.

   For example, the following command would create a DB2 event database called **event**, using the user ID **db2admin** and the password **mypassword**:

   cr_event_db2zos dbName=client db2admin mypassword

4. Restart the server. For a federated node, you must also stop and restart the node agent using the **stopNode** and **startNode** commands.

After you finish configuring the database, you can use the administrative console to test the database configuration. To do this, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Manually creating an Oracle event database:

Manually generate a database configuration script for an Oracle event database using the **cr_event_oracle** command.

Manually run the generated database configuration script for an Oracle event database by completing the following steps:

1. On the server system, go to the directory containing the generated script. The default location is the *profile_root*/databases/event/node/server/dbscripts/db2 directory. If you specified a value for the **outputScriptDir** parameter of the database configuration administrative command, the scripts are stored in that location instead.

2. Using an ASCII text editor, make any required modifications to the configuration script. The name of the script varies depending upon the operating system in use:

- 　Windows 　 **cr_event_oracle.bat**

- 　Linux 　 　UNIX 　 **cr_event_oracle.sh**

3. Run the database creation script using the following syntax (remember to specify the file extension, if applicable):

```
cr_event_oracle password sys_user
  sys_password [sid=sid]
  [oracleHome=oracle_home]
```

The parameters are as follows:

password

   The password for the schema user ID. This parameter is required.

sys_user

   The user ID that has SYSDBA privileges in the Oracle database (typically the sys user). This parameter is required.

sys_password

   The password for the specified sys user ID. If this user ID does not use a password, type **none**.

sid=*sid*

   The Oracle system identifier (SID). This parameter is optional.

oracleHome=*oracle_home*

   The Oracle home directory. This parameter is optional; if you do not specify a value, a generated path is used.

For example, the following command would create the Oracle event database using the schema user ID **auser** and the sys user ID **sys**:

```
cr_event_oracle auser sys syspassword sid=event oracleHome=c:\oracle
```

4. Restart the server. For a federated node, you must also stop and restart the node agent using the **stopNode** and **startNode** commands.

After you finish configuring the database, you can use the administrative console to test the database configuration. To do this, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Manually creating a SQL Server event database:

Manually generate a database configuration script for a SQL Server event database using the **cr_event_mssql** command.

Manually run the generated database configuration script for a SQL Server event database by completing the following steps:

1. On the server system, go to the directory containing the generated script. The default location is the *profile_root*/databases/event/node/server/dbscripts/db2 directory. If you specified a value for the **outputScriptDir** parameter of the database configuration administrative command, the scripts are stored in that location instead.

2. Using an ASCII text editor, make any required modifications to the cr_event_mssql.bat script.

3. Run the database creation script using the following syntax:

```
cr_event_mssql user_id password [server=server] sauser=sa_user
 sapassword=sa_password
```

The parameters are as follows:

user_id
> The SQL Server login user ID that will own the created tables. This user ID must be created in SQL Server so that a JDBC connection can be made to the database. (The JDBC drivers do not support trusted connections.)

password
> The password for the new login user ID that is created.

server=*server*
> The name of the server that contains the SQL Server database. This parameter is optional; the default value is the local host.

sauser=*sa_user*
> The **sa** user ID. This user ID must have sufficient privileges to create databases and user logins.

sapassword=*sa_password*
> The **sa** password, if using mixed authentication mode. If the sa user ID does not have a password set, specify **sapassword=** with no value. Omit this parameter if you are using a trusted connection.

For example, the following command would create the SQL Server event database using the login user ID **userid**:

```
cr_event_mssql userid apassword server=myserver sauser=sa sapassword=sapassword
```

4. Restart the server. For a federated node, you must also stop and restart the node agent using the **stopNode** and **startNode** commands.

After you finish configuring the database, you can use the administrative console to test the database configuration. To do this, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Upgrading the event database from a previous version:

If you have migrated from a previous version of Common Event Infrastructure and you are using event persistence, you might need to upgrade an existing event database.

Upgrading the event database is required if you are migrating from Common Event Infrastructure version 5.1 or earlier.

The database upgrade process upgrades the schema and metadata of the existing event database to the current version while preserving existing event data.

The database upgrade script upgrades the schema and metadata of the existing event database to the current version.

Unsupported versions: If your event database uses a version of database software that is no longer supported by Common Event Infrastructure 6.0, you must first migrate the database to a supported version using the appropriate procedure for the database software. You can then follow the event database upgrade process to upgrade the database.

Upgrading a DB2 event database from a previous version:

If you have an existing DB2 event database from Version 5.1 of Common Event Infrastructure on a Linux, UNIX, or Windows system, you must upgrade it to the current version.

To upgrade a DB2 event database on a Linux or UNIX system:
1. Make a backup copy of the existing event database.
2. Go to the *profile_root*/bin directory.
3. Run the DB2 upgrade script for your operating system:

- Windows systems:

  ```
  eventUpgradeDB2 runUpgrade=[true|false] dbUser=user
    [dbName=name] [dbPassword=pw]
    [dbNode=node] [scriptDir=dir]
  ```

-   Linux and UNIX systems:

  ```
  eventUpgradeDB2.sh runUpgrade=[true|false] dbUser=user
    [dbName=name] [dbPassword=pw]
    [dbNode=node] [scriptDir=dir]
  ```

The typical required parameters are as follows:

runUpgrade
>   Indicates whether you want the upgrade script to automatically run the generated DDL scripts to complete the database upgrade. This parameter is required. Specify **false** if you want to manually perform the database upgrade at a later time or on a different system.

dbUser
>   Specifies the DB2 user ID to use. This parameter is required.

dbName
>   Specifies the DB2 database name. The default name for the event database is **event**. This parameter is required if you specified **runUpgrade=true**.

dbPassword
>   Specifies the password for the specified DB2 user ID. This parameter is optional; if you do not specify a password, DB2 prompts you to type it.

dbNode
>   Specifies the database node name. This parameter is required if you are running the upgrade script from a DB2 client system.

scriptDir
>   Specifies the directory you want to contain the generated DDL scripts. This parameter is optional; if you do not specify a directory, the scripts are stored in the .\eventDBUpgrade\db2 directory.

To see a complete list of parameters and usage information, run the **eventUpgradeDB2** script with no parameters.

The upgrade script generates the required DDL scripts for upgrading the event database. If you specified **runUpgrade=true**, the DDL scripts are automatically run, completing the upgrade.

The following example upgrades an existing DB2 database on a Windows system:

```
eventUpgradeDB2 runUpgrade=true dbUser=db2inst1 dbName=event
```

If you specified **runUpgrade=false**, you must manually run the DDL scripts on the database system to complete the database upgrade.

Upgrading a DB2 for z/OS event database from a previous version:

If you have an existing DB2 event database from Version 5.1 of Common Event Infrastructure on a z/OS system, you must upgrade it to the current version.

To upgrade a DB2 event database on a z/OS system:
1. Make a backup copy of the existing event database.
2. Go to the *profile_root*/bin directory.
3. Run the DB2 for z/OS upgrade script for your client operating system:

   - Windows systems:

```
eventUpgradeDB2ZOS runUpgrade=[true|false] dbUser=user
  [dbName=name] [dbPassword=pw]
  [scriptDir=dir] storageGroup=group
  bufferPool4K=4kbufpool bufferPool8k=8kbufpool
  bufferPool16K=16kbufpool
```

- `Linux` `UNIX` Linux and UNIX systems:

```
eventUpgradeDB2ZOS.sh runUpgrade=[true|false] dbUser=user
  [dbName=name] [dbPassword=pw]
  [scriptDir=dir] storageGroup=group
  bufferPool4K=4kbufpool bufferPool8k=8kbufpool
  bufferPool16K=16kbufpool
```

The typical required parameters are as follows:

runUpgrade
> Indicates whether you want the upgrade script to automatically run the generated DDL scripts to complete the database upgrade. This parameter is required. Specify false if you want to manually upgrade the database at a later time or on a different system.
>
> **z/OS systems:** This parameter is ignored on a native z/OS system. Automatically running the generated DDL scripts is supported only on a client system.

dbUser
> Specifies the DB2 user ID to use. This parameter is required.

dbName
> Specifies the DB2 database name. The default name for the event database is **event**. This parameter is required if you specified **runUpgrade=true**.

dbPassword
> Specifies the password for the specified DB2 user ID. This parameter is optional; if you do not specify a password, DB2 prompts you to type it.

scriptDir
> Specifies the directory you want to contain the generated DDL scripts. This parameter is optional; if you do not specify a directory, the scripts are stored in the .\eventDBUpgrade\db2zos directory.

storageGroup
> Specifies the name of the storage group. This parameter is required.

bufferPool4K
> Specifies the name of the 4K buffer pool. This parameter is required.

bufferPool8K
> Specifies the name of the 8K buffer pool. This parameter is required.

bufferPool16K
> Specifies the name of the 16K buffer pool. This parameter is required.

To see a complete list of parameters and usage information, run the **eventUpgradeDB2ZOS** script with no parameters.

The upgrade script generates the required DDL scripts for upgrading the event database. If you specified **runUpgrade=true** on a client system, the DDL scripts are automatically run, completing the upgrade.

The following example upgrades a DB2 for z/OS event database from a Windows client system:

```
eventUpgradeDB2ZOS runUpgrade=true dbUser=db2inst1 dbName=event
  storageGroup=sysdeflt bufferPool4K=BP9 bufferPool8K=BP8K9 bufferPool16K=BP16K9
```

If you specified **runUpgrade=false**, or if you ran the upgrade script on the z/OS system, you must manually run the generated DDL scripts on the z/OS system using the SQL Processor Using File Input (SPUFI) facility. This step completes the database upgrade.

Upgrading an Oracle event database from Version 5:

If you have an existing Oracle event database from Version 5.1 of Common Event Infrastructure, you must upgrade it to the current version.

To upgrade an Oracle event database:
1. Make a backup copy of the existing event database.
2. Go to the *profile_root*/bin directory.
3. Run the Oracle upgrade script for your operating system:
   - Windows systems:
     ```
     eventUpgradeOracle runUpgrade=[true|false] schemaUser=schemauser
       [oracleHome=dir] [dbName=name]
       [dbUser=sysuser] [dbPassword=pw]
       [scriptDir=dir]
     ```
   - Linux and UNIX systems:
     ```
     eventUpgradeOracle.sh runUpgrade=[true|false] schemaUser=schemauser
       [oracleHome=dir] [dbName=name]
       [dbUser=sysuser] [dbPassword=pw]
       [scriptDir=dir]
     ```
   The typical required parameters are as follows:

   runUpgrade
   > Indicates whether you want the upgrade script to automatically run the generated DDL scripts to complete the database upgrade. This parameter is required. Specify **false** if you want to manually upgrade the database at a later time or on a different system.

   schemaUser
   > Specifies the Oracle user ID that owns the database tables. This parameter is required.

   oracleHome
   > Specifies the Oracle home directory. This parameter is required if you specified **runUpgrade=true**.

   dbName
   > Specifies the Oracle database name. The default name for the event database is **event**. This parameter is required if you specified **runUpgrade=true**.

   dbUser
   > Specifies the Oracle sys user ID. This parameter is required if you specified **runUpgrade=true**.

   dbPassword
   > Specifies the password for the sys user ID. Do not specify this parameter if the sys user ID has no password.

   scriptDir
   > Specifies the directory you want to contain the generated DDL scripts. This parameter is optional; if you do not specify a directory, the scripts are stored in the .\eventDBUpgrade\oracle directory.

   To see a complete list of parameters and usage information, run the **eventUpgradeOracle** script with no parameters.

The upgrade script generates the required DDL scripts for upgrading the event database. If you specified **runUpgrade=true**, the DDL scripts are automatically run, completing the upgrade.

The following example upgrades an existing Oracle database on a Windows system:
```
eventUpgradeOracle runUpgrade=true schemaUser=cei
  dbName=event dbUser=sys
```

If you specified **runUpgrade=false**, you must manually run the DDL scripts on the database system to complete the database upgrade.

Configuring WebSphere Business Integration Adapters

You must perform installation and configuration procedures for the WebSphere Business Integration Adapter to work with IBM Business Process Manager.

1. Install the adapter.

    a. Follow the procedures outlined at Installing WebSphere Business Integration Adapters products, which describe how to install WebSphere Business Integration Adapters.

    b. Determine whether there are any additional required procedures that are specific to your adapter by going to the WebSphere Business Integration Adapters documentation and expanding the navigation under **Adapters**. If any additional installation tasks are listed for your adapter, perform those tasks.

2. Configure your adapter by going to the WebSphere Business Integration Adapters documentation, expanding the navigation under **Adapters**, and following the configuration instructions for your adapter. The configuration procedure generates the required artifacts.

3. Install the application EAR file by following the instructions for Deploying a mediation module.

Setting up administration of WebSphere Business Integration Adapters:

You must perform several administrative functions before you can manage a WebSphere Business Integration Adapter.

- You must be familiar with the procedures outlined in Installing WebSphere Business Integration Adapters products.

- You must have installed the application EAR file to create the artifacts required for the WebSphere Business Integration Adapter before you perform this task.

In order to have administrative control over a WebSphere Business Integration Adapter, perform the following administrative functions.

1. Create a Queue Connection Factory.

    From the top level of the administrative console, follow these steps:

    a. Expand **Resources**.

    b. Expand **JMS**.

    c. Select **Queue connection factories**.

    d. Select the scope level that matches the scope level of the Administration Input/Output Queues.

    e. Click **New** to create a new JMS queue connection factory.

    f. Choose the JMS resource provider. Select **Default messaging provider**, and click **OK**.

    g. Accept all the default values with the following exceptions:

        - **Name**: QueueCF

        - **JNDI Name**: jms/QueueCF

        - **BusName**: *Your bus name*

    h. Complete the creation of your new JMS queue connection factory by clicking **OK**.

        A message window appears at the top of the JMS queue connection factory panel.

    i. Apply the changes that you have made at the local configuration level to the master configuration by clicking **Save** in the message window.

2. Create a WebSphere Business Integration Adapter resource.

    From the top level of the administrative console, follow these steps:

    a. Expand **Resources**.

    b. Open the WebSphere Business Integration Adapters page.

        Select **WebSphere Business Integration Adapters**.

    c. Create a new WebSphere Business Integration Adapter by clicking **New**.

    d. Accept all the default values with the following exceptions:

- **Name**: EISConnector
- **Queue connection factory JNDI name**: jms/QueueCF
- **Administration input queue JNDI name**: *connectorName/AdminInQueue*
- **Administration output queue JNDI name**: *connectorName/AdminOutQueue*

    e. Complete the creation of the WebSphere Business Integration Adapter by clicking **OK**.

       A message window appears at the top of the WebSphere Business Integration Adapters panel.

    f. Apply the changes that you have made at the local configuration level to the master configuration by clicking **Save** in the message window.

3. Enable the WebSphere Business Integration Adapter Service.

   From the top level of the administrative console, follow these steps:

    a. Expand **Servers**.

    b. Expand **Server types**.

    c. Select **WebSphere application servers**.

    d. From the list of servers, select a server where the WebSphere Business Integration Adapter Service is to be enabled.

       Click the name of the server that hosts the resources of interest.

    e. From the **Business Integration** list on the Configuration tab, select **WebSphere Business Integration Adapter Service**.

    f. Ensure that the **Enable service at server startup** check box is selected.

    g. Click **OK**.

       A message window appears at the top of the WebSphere Business Integration Adapters page.

    h. Repeat steps 3d to 3g for each server on which the WebSphere Business Integration Adapter Service is to be enabled.

    i. Apply the changes that you have made at the local configuration level to the master configuration by clicking **Save** in the message window.

   Note: When you enable or disable a WebSphere Business Integration Adapter service, you must restart the server in order for the changes to take effect.

Configuring IBM Business Process Manager for Service Federation Management

You can enable IBM Business Process Manager as a connectivity server that can be administered by the Service Federation Management (SFM) console provided with WebSphere Service Registry and Repository version 7.0. The SFM console can then configure SFM proxies in IBM Business Process Manager.

You might have separate enterprise service buses (ESBs) in different business units. Each ESB and associated service registry constitute a separate domain of connected service applications. This can result in expensive duplication of applications between domains and also in increased development effort to implement application connectivity across domains. SFM, provided in WebSphere Service Registry and Repository version 7.0, allows you to establish bridges between separate ESBs, allowing services and applications to be shared between domains.

SFM provides:

- A federation model which provides a unifying view of federation relevant content.
- A Service Connectivity Management Protocol, which accesses the service connectivity and registry components supporting a domain.
- A console for controlling service domains.

SFM allows the console user to configure services in one domain so that they are available to service consumers in another domain; the service endpoints in one domain are available as service proxy endpoints in another domain.

Configuring the Service Connectivity Management connectivity server:

The Service Federation Management (SFM) console uses the Service Connectivity Management Protocol (SCMP) to communicate with IBM Business Process Manager.

IBM Business Process Manager exposes the Atom based protocol as a system REST service named SCM Connectivity Server. This service is enabled by default in the REST service provider for stand-alone servers and the deployment manager of a Network Deployment environment.

1. Configure the REST services. The Atom documents returned by the protocol contain absolute URLs which are retained by the SFM console. The protocol, host name, and port number used in those absolute URLs are taken from the REST service configuration. It is important to consider any load balancing and network components between the SFM console server and IBM Business Process Manager.

   a. Configure the protocol, fully-qualified host name, and port number, for the stand-alone server or deployment manager REST service provider as described in the Configuring REST services in a service provider topic.

2. Provide the SFM console user with details to access the connectivity server.

   a. The URL of the Atom service document for the connectivity server can be found on the REST services panel. The service has the type *SCM Connectivity Server*.

   b. If IBM Business Process Manager administrative security is enabled, the SFM console user will also require a username and password to access the service endpoint. These credentials must be for a user in the RestServicesUser group who has sufficient administrative rights to install Service Connectivity Architecture modules.

Configuring the Service Connectivity Management connectivity provider:

You can configure all Service Connectivity Management (SCM) connectivity providers for your environment by using the administrative console.

An SCM connectivity provider is a logical partition of the ESB that is exposed via the SCM Protocol. It defines the target (server or cluster) to which proxy gateway modules will be deployed when a SCM group proxy is created on that connectivity provider. It also defines properties that will be used for proxy targets created on those group proxies.

Select **Service integration > SCM connectivity providers**. The SCM connectivity providers page opens, displaying all connectivity providers in your environment.

SCM connectivity providers can be added, removed, or worked with from this page.

Adding a connectivity provider:

You can add a server or a cluster as a Service Connectivity Management (SCM) connectivity provider using the administrative console.

1. Click **Service integration > SCM connectivity providers**. The SCM connectivity providers page opens, displaying all connectivity providers in your environment.

2. Click **Add** to add a server or a cluster as a connectivity provider. The wizard for adding connectivity providers will open.

3. Complete **Step 1. Select a server or cluster** on the wizard to identify the server or cluster to which SCM group proxies for this connectivity provider should be deployed. Click **Next**.

4. Complete **Step 2. Specify SCM connectivity provider properties** on the wizard to specify the properties:

Option	Description
Name	The name of the SCM connectivity provider. This must be unique within the cell. An exception is thrown if the name already exists. The name, description, contact, organization and location will be visible to users of the Service Federation Management console.
Description	A brief description of the SCM connectivity provider. This is optional and defaults to an empty string. The name, description, contact, organization and location will be visible to users of the Service Federation Management console.
Contact	The name of a contact person for the SCM connectivity provider. This is optional and defaults to an empty string. The name, description, contact, organization and location will be visible to users of the Service Federation Management console.
Organization	The name of the owning organization for the SCM connectivity provider. This is optional and defaults to an empty string. The name, description, contact, organization and location will be visible to users of the Service Federation Management console.
Location	The location for the SCM connectivity provider. This is optional and defaults to an empty string. The name, description, contact, organization and location will be visible to users of the Service Federation Management console.
HTTP host	The host name that will be returned for the endpoint of an insecure proxy target. This should be the host that web service clients in another domain will use to access the proxy, taking in to account web servers and other network components.
HTTP port	The port that will be returned for the endpoint of an insecure proxy target. This should be the port that web service clients in another domain will use to access the proxy, taking in to account web servers and other network components.
HTTPS host	The host name that will be returned for the endpoint of a secure proxy target. This should be the host that web service clients in another domain will use to access the proxy, taking in to account web servers and other network components.
HTTPS port	The port that will be returned for the endpoint of a secure proxy target. This should be the port that web service clients in another domain will use to access the proxy, taking in to account web servers and other network components.
Authentication Alias	The name of the authentication alias that will provide the basic authentication credentials used to retrieve WSDL documents via HTTP from the service registry associated with the SCM connectivity provider's domain. This parameter need not be specified if basic authentication is not required to connect to the service registry.

Option	Description
SSL configuration	The name of the SSL configuration used to retrieve WSDL documents via HTTP from a secure service registry associated with the SCM connectivity provider's domain. This is optional and, if not specified, the server's default SSL configuration will be used.

5. Click **Finish**. The SCM connectivity provider page will open, with the new connectivity provider listed.
6. Review the **Messages** section to ensure that the connectivity provider and its properties are complete.
7. Click **Save** to save the connectivity provider to the master configuration.

Removing a connectivity provider:

You can remove a server or a cluster as a Service Connectivity Management (SCM) connectivity provider using the administrative console.

1. Click **Service integration > SCM connectivity providers**. The SCM connectivity providers page opens, displaying all connectivity providers in your environment.
2. Select the connectivity provider. Click **Remove** to remove the server or cluster as a connectivity provider.

Working with connectivity providers:

You can list, show, and modify a Service Connectivity Management (SCM) connectivity provider using the administrative console.

1. Click **Service integration > SCM connectivity providers**. The SCM connectivity providers page opens, displaying all connectivity providers in your environment.
2. Select a connectivity provider to display its details page.
3. Fields can be modified on this page, although you cannot modify the **Name**, **Author**, **Created**, or **Updated** fields.
4. Use the **Apply**, **OK**, **Reset**, and **Cancel** buttons in order to complete any modifications.

Service Connectivity Management usage of Service Component Architecture (SCA) modules:

A Service Component Architecture (SCA) module is installed every time the Service Federation Management console creates a group proxy. You can view SCA modules on the Enterprise Application view and SCA module list of the administrative console.

A versioned SCA module is used for the group proxy. The base module name is ScmGroupProxy and the version number is v1_0_0. The cell identifier is formed from the connectivity provider name and a unique identifier for the group proxy within the cell.

The name of the service module as it appears in the module list is ScmGroupProxy (*ConnectivityProviderName_UniqueId*), and the service application name is of the form ScmGroupProxy_v1_0_0_*ConnectivityProviderName_UniqueID*App. The same unique identifier also forms part of the URL and Atom identifier used to access the group proxy via the SCM protocol.

A group proxy created on the connectivity provider *ExampleConnectivityProvider* with the generated unique identifier *xot5*, would result in a module with the name ScmGroupProxy (ExampleConnectivityProvider_xot5) being deployed as the application ScmGroupProxy_v1_0_0_ExampleConnectivityProvider_xot5App to the server or cluster associated with the connectivity provider.

The URL to access the Atom document representing the group proxy resource would be of the form:

```
/rest/scmp/connectivity-provider/ExampleConnectivityProvider-g0jk9fzm/mediation/group-proxy-
type/group-proxy/xot5-g0jkjal9
```

The Atom identifier for that document would be of the form:

```
urn:wesb-scmp:cell/localhostNode01Cell/connectivity-provider/ExampleConnectivityProvider-
g0jk9fzm/mediation/group-proxy-type/group-proxy/xot5-g0jkjal9
```

Note: Attributes of the SCM group proxy appear as promoted properties of the module. These can be viewed via the administration console but must not be modified.

Service Connectivity Management mapping to proxy gateways:

A Service Connectivity Management (SCM) group proxy module is implemented as a proxy gateway within IBM Business Process Manager

The SCM proxy targets for the group proxy appear as virtual services of the proxy gateway and can be viewed in Business Space powered by WebSphere via the Proxy gateway widget. Properties of the proxy target appear as properties of the virtual service.

Note: Virtual services associated with SCM group proxy modules must not be added, removed, or modified, via the Proxy gateway widget.

Configuring the SMTP server

Define the Simple Mail Transfer Protocol (SMTP) server that the Process Server runtime environment should use to send e-mail notifications. After a new install, you must manually configure the SMTP server to enable mail notifications.

This topic provides the steps that are necessary to change the SMTP server settings to point to the right SMTP server. The default SMTP server settings are:

```
<server merge="mergeChildren">

        <!-- email properties -->
        <email>
            <!-- SMTP server that mail should be sent to -->
            <smtp-server>smtp.yourcompany.com</smtp-server>

        </email>
```

1. Stop the server(s).
   - For a network deployment environment:
     - Process Server and Process Center clusters:
       DMGR-profile-root\config\cells*cell-name*\clusters*ClusterName*\process-center\config\100Custom.xml
     - Process Server and Process Center cluster members:
       DMGR-profile-root\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\100Custom.xml
   - For a standalone environment:
     profile-root\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\100Custom.xml
2. Add the following to the `100Custom.xml` file:

```
<properties>
  <server merge="mergeChildren">

  <!-- email properties -->
  <email merge="mergeChildren">
   <!-- SMTP server that mail should be sent to -->
```

```
   <smtp-server merge="replace">SMTP.YOURCOMPANY.COM</smtp-server>
  </email>
  </server>
 </properties>
```

Where *SMTP.YOURCOMPANY.COM* is the name of the actual SMTP server.

3. Save your changes and restart the server(s).

Advanced configuration: customizing your environment

After you install and configure the runtime environment on your system in IBM Business Process Manager, you might want to customize your configuration. For example, you might want to customize settings, set up an additional security provider, set up user accounts, and change and encrypt passwords.

Customizing the settings used by Process Server to connect to Process Center

After you install and configure IBM Business Process Manager, you can change the Process Server from an offline server to a Process Center connected server, and vice versa.

Make sure that you have installed and configured the Process Server component of IBM Business Process Manager.

Use the procedure in this topic to customize the Process Server connection settings for either a stand-alone server environment or network deployment environment.

Typically, you manage configuration customization by editing the `100Custom.xml` file. (If you must change the configuration, for example to change the address of the Process Center, you can edit the `99Local.xml` configuration file). For an example of customizing and editing the `100Custom.xml` file, see "Changing passwords after installation" on page 581.

For example, you can perform the following tasks:
- Update the host and port name of the connection details.
- Change Process Server from an offline server to a Process Center connected server, and vice versa. For example, if you configured Process Server as an offline server, you can change the configuration to a Process Center connected server. You can administer and manage a Process Center connected Process Server directly from the Process Center administrative console. For information about administering a Process Server through the Process Center user interface, see *Administering IBM Business Process Manager* in the information center.
- Change the connection URL.

If your Process Center is connected to a Process Server, you can manage it directly through the Process Center user interface.

Important:
Before you directly edit the `99Local.xml` and `00Static.xml` configuration files, create backup files for each.

To customize the settings used by Process Server to connect to a Process Center, complete the following steps:

1. Stop the deployment manager and the Process Server cluster or server if they are running.

2. Edit the connection values in the `99Local.xml` file.

   The directory path location of the `99Local.xml` file depends on whether your environment is stand-alone, clustered network deployment, or single server network deployment.

   For a stand-alone server environment
   ```
   <stand-alone-profile-root>\config\cells\<cell-name>\nodes\<stand-alone-node-name>\
   servers\<server-name>\process-server\config\system\99Local.xml
   ```

For a network deployment cluster environment

- In the network deployment Process Server cluster: `<DMGR-profile-root>\config\cells\` `<cell-name>\clusters\<cluster-name>\process-server\config\system\99Local.xml`

- Each Process Server cluster member at: `<DMGR-profile-root>\config\cells\<cell-name>\` `nodes\<custome-node-name>\servers\<cluster-member-name>\process-server\config\` `system\99Local.xm`

For a network deployment single server environment

`<DMGR-profile-root>\config\cells\<cell-name>\nodes\<custome-node-name>\servers\` `<server-name>\process-server\config\system\99Local.xml`

See the following example:

Before the update:

```
<repository-server-url>/ProcessCenter</repository-server-url>
<repository-server-interval>-1</repository-server-interval>
```

After the update:

```
<repository-server-url>http://localhost:9190/ProcessCenter</repository-server-url>
<repository-server-interval>10</repository-server-interval>
```

Important: An offline server is indicated with **-1** as a value, for example, **<repository-server-interval>-1</repository-server-interval>**.

3. Restart the deployment manager

4. If you have a network deployment environment, synchronize the node agents from the administrative console. Deployment manager and node agent synchronization are not needed for a stand-alone server. For information on how to synchronize node agents, see the **syncNode** command in the WebSphere Application Server information center.

5. Restart the Process Server cluster or server.

The settings used to connect Process Server to Process Center have been customized.

Related tasks:

"Changing passwords after installation" on page 581

You can use the Process Admin console, the WebSphere Application Server administrative console, and configuration files to change the default password for the **tw_admin** and **tw_user** users in stand-alone or ND cluster environments.

Related information:

WebSphere Application Server information center

Customizing the Process Server/Process Center cluster to work with a web server

After you install and configure IBM Business Process Manager, you must customize your environment so that it can function properly as a cluster with a web server.

Make sure that the Process Server has been installed and configured, and that you have created and configured the servers and clusters. You cannot start the cluster until you complete the procedures in this topic.

Typically, you manage configuration customization by editing the `100Custom.xml` file. (If you must change the configuration, for example to change the address of the Process Center, you can edit the `99Local.xml` configuration file). The `100Custom.xml` files are located in the `config` directory:

- In the network deployment Process Server and Process Center clusters:

  `DMGR-profile-root\config\cells\cell-name\clusters\ClusterName\process-center\config\system\` `100Custom.xml`

- Each Process Server and Process Center cluster member at:

DMGR-profile-root\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\
config\100Custom.xml

For an example of customizing and editing the `100Custom.xml` file, see "Changing passwords after installation" on page 581.

Important:
Before you directly edit the `99Local.xml` and `00Static.xml` configuration files, create backup files for each.

The procedures in this topic describe how to:
- Configure the `99local.xml` file in both the Process Server and Process Center to point to a web server.
- Change the Process Server from offline mode to online mode for use with a web server.
- Set the Process Center to Process Server communication to work with HTTP over SSL or HTTP Secure (HTTPS).

1. To configure the `99local.xml` file in both the Process Server and the Process Center to point to a web server:
   a. Stop the deployment manager.
   b. Edit the `99local.xml` file on both the Process Server and Process Center cluster machines to point to the web server.
      - In the network deployment Process Server and Process Center clusters: *DMGR-profile-root*\config\cells*cell-name*\clusters*ClusterName*\process-center\config\system\99Local.xml
      - Each Process Server and Process Center cluster members at: *DMGR-profile-root*\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\system\99Local.xm

        See the following example:

        Before update:

        http://*APPSERVER_URL*/ProcessCenter

        After update:

        http://*YOUR_APPSERVER_URL*:80/ProcessCenter

        If there is no web server, then all URLs in the `99local.xml` files point to the respective cluster member host name and port. If there is no web server, the cluster server member xml files do not need to be changed. If you have a web server, change all values to point to the web server host name and port with the actual host name and port of the web server. If you are using the default port for http (80), then port is optional. Ensure that you do not leave any tokenized value in the `99local.xml` file.
   c. If you do not plan to continue with the rest of this procedure, start the deployment manager. Otherwise, continue to the next step.
   d. Synchronize the node agents from administrative console. For more information, see the **syncNode** command in the WebSphere Application Server information center.

2. To change the Process Server from offline mode to online mode for use with a web server:
   a. Stop the deployment manager.
   b. Edit the connection values in the `99Local.xml` file located on the Process Server cluster machine.
      - In the network deployment Process Server cluster: *DMGR-profile-root*\config\cells*cell-name*\clusters*ClusterName*\process-center\config\system\99Local.xml
      - Each Process Server cluster member at: *DMGR-profile-root*\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\system\99Local.xm

      See the following example:

      ```
      <repository-server-url>http://w2k8-64bitp.austin.ibm.com/ProcessCenter</repository-server-url>
      <repository-server-interval>10</repository-server-interval>
      (uncomment this only if you want to use https)
      <!-- Force Process Center Server to use https to deploy ProcessApps and Toolkits to Process Servers -->
      ```

```
<!-- <deploy-snapshot-using-https>true</deploy-snapshot-using-https>
<!-- Force Process Center Server to use https to deploy ProcessApps and Toolkits to Process Servers -->
<!--
<deploy-snapshot-using-https>true</deploy-snapshot-using-https>
 --><server-name>Process Server</server-name>
<server-description>Process Server Production Cluster</server-description>
<server-host>w2k8-64bitps1.austin.ibm.com</server-host>
<server-port>80</server-port>
<environment-type>Production</environment-type>
```

In the previous example:

```
<repository-server-url>http://w2k8-64bitp.austin.ibm.com/ProcessCenter</repository-server-url>
```

- is the hostname of the Process Center cluster web server.

```
<repository-server-interval>10</repository-server-interval>
```

- is the repository server interval which is set to -1 by default, change it to a positive number such as 10. This value determines how often (measured in seconds) the Process Server sends connection data to the Process Center.

```
<server-host>w2k8-64bitps1.austin.ibm.com</server-host>
```

- is the host name of the Process Server cluster web server.

```
<server-port>80</server-port>
```

- is the Process Server web server http port. If you are using https, specify the https port.)

c. If you do not plan to continue with the rest of this procedure, start the deployment manager. Otherwise, continue to the next step.

d. Synchronize the node agents from the administrative console.

For information on how to synchronize node agents, see **syncNode** command in the WebSphere Application Server information center.

3. To set the Process Center to Process Server communication to work with HTTP over SSL or HTTP Secure (HTTPS).

a. Import the Process Server SSL certificate into Process Center:

1) On the Process Center administrative console, click **Security** > **SSL certificate and key management** > **Manage endpoint security configurations** > *Click on any node* > **Key stores and certificates** > **CellDefaultTrustStore** > **Signer certificates** > **Retrieve from port**.

2) Enter an alias, the host name, and secure port of the Process Server web server. The default IHS web server secure port is 443. If there is no web server, the host name and port values are the same as the host name and port values of the Process Center cluster member.

3) Click **Retrieve signer information**, click **Apply** and **Save**.

4) Restart the cluster.

b. Import the Process Center SSL certificate into Process Server:

1) On the Process Server administrative console, go to **Security** > **SSL certificate and key management** > **Manage endpoint security configurations** > *Click on any node* > **Key stores and certificates** > **CellDefaultTrustStore** > **Signer certificates** > **Retrieve from port**.

2) Enter an alias, the host name, and secure port of the Process Server web server. The default IHS web server secure port is 443. If there is no web server, the host name and port values are the same as the host name and port values of the Process Center cluster member.

3) Click **Retrieve signer information**, click **Apply** and **Save**.

4) Restart the cluster.

c. Edit the following line in the 99local.xml file located in Process Center cluster:

- In the network deployment Process Center cluster: *DMGR-profile-root*\config\cells*cell-name*\ clusters*ClusterName*\process-center\config\system\99Local.xml.

- In each Process Center cluster member: *DMGR-profile-root*\config\cells*cell-name*\nodes\
  node-name\servers*serverName*\process-center\config\system\99Local.xml

  `<deploy-snapshot-using-https>true</deploy-snapshot-using-https>`

  Note: If **deploy-snapshot-using-https** is set to **true**, and all process servers are secure, then Process Center to Process Server communication will work with HTTP over SSL or HTTP Secure (HTTPS). The reverse is also true. However, if you have a mix of secure and non-secure servers, Process Center is only able to communicate with Process Servers that are configured to work with this set up.

  d. For all the URLs in 99local.xml in the following folders, make sure that "http" is changed to "https" and that the URLs point to the secure port of the web server:
  - In the network deployment Process Server/Process Center cluster: *DMGR-profile-root*\config\
    cells*cell-name*\clusters*ClusterName*\process-center\config\system\99Local.xml
  - In each Process Server/Process Center cluster member: *DMGR-profile-root*\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\system\99Local.xml

  e. Confirm that the following lines in the Process Server cluster 99local.xml use "https" and point to the URL and port of the web server:

  `<repository-server-url>https://w2k8-64bitp.austin.ibm.com/ProcessCenter</repository-server-url> <server-port>443<`

  f. Start the deployment manager.
  g. Restart the cluster.

Related tasks:
"Changing passwords after installation" on page 581
You can use the Process Admin console, the WebSphere Application Server administrative console, and configuration files to change the default password for the **tw_admin** and **tw_user** users in stand-alone or ND cluster environments.

Related information:

⯈ WebSphere Application Server information center

Configuring Oracle Real Application Cluster (RAC) for use with IBM Business Process Manager

Oracle Real Application Clusters (RAC) is an option of an Oracle database that brings together two or more computers to form a clustered database that behaves as a single system. In a RAC database, Oracle processes that are running in separate nodes access the same data from a shared disk storage.

During the initial installation and configuration of IBM Business Process Manager it is not possible to use Oracle RAC as the target database. You must specify the SID of the single instance of the Oracle database during configuration. The JDBC URL that is automatically generated and supported for accessing the Oracle database is **jdbc:oracle:thin:@<hostname>:<port number>:<DBName>**. The JDBC URL must be edited as a post configuration step to use Oracle RAC.

There are two scenarios to consider:
- If you are using a Standalone profile you need to create the profile using SID as the value for the database name.
- If you are setting up a Network Deployment environment, the profiles and the clusters need to be configured using SID.

IBM Business Process Manager always creates the JDBC URL in the following format:
jdbc:oracle:thin:@[HOST][:PORT]:SID. The format can be edited to one of the following to use Oracle RAC.
- `jdbc:oracle:thin:@//[HOST][:PORT]/SERVICE`

  Where **SERVICE** is the Oracle service name.

Note: This new syntax can be used with the SCAN feature available on Oracle 11g R2 and can not be used without the SCAN feature.

- General format to specify a URL for an Oracle RAC:

```
jdbc:oracle:thin:@(DESCRIPTION=
(LOAD_BALANCE=on)
(ADDRESS=(PROTOCOL=TCP)(HOST=host1)(PORT=1521))
(ADDRESS=(PROTOCOL=TCP)(HOST=host2)(PORT=1521))
(CONNECT_DATA=(SERVICE_NAME=service_name)))
```

If a Oracle RAC node failover occurs, IBM Business Process Manager stops processing and you might need to restart all of the IBM Business Process Manager nodes. If you experience process-recovery issues, refer to Process recovery issues in certain situations in IBM Business Process Manager V7.5.

1. Specify the RAC URL as the Oracle URL when defining the relevant Oracle JDBC data sources.

    a. In the administrative console, select **Resources** > **JDBC** > **Data sources**.

    b. Edit all of the data sources using Oracle with the JDBC URL to use one of the formats above.

    Refer to Configuring a data source using the administrative console.

2. Update the Process Server/Process Center and Performance Data Warehouse 98Database.xml configuration files. All instances of <url>jdbc:oracle:thin:@*hostname*:*portnumber*:SID</url> must be changed to the URL format mentioned above to use with Oracle RAC.

    Note: The cluster-level 98Database.xml files must be updated as well as all cluster member-level 98Database.xml files. For example, to update a clustered Process Center:

    a. Update *DMGR-PROFILE-DIR*\config\cells*cellName*\clusters*clusterName*\process-center\config\ system\98Database.xml.

    b. Update *DMGR-PROFILE-DIR*\config\cells*cellName*\nodes*nodeName*\servers*memberName*\process-center\config\system\98Database.xml for all node/member combinations of the Process Server cluster.

    c. Confirm that you have updated all of the 98Database.xml files for your cluster.

    Process Center: The 98Database.xml configuration file locations:

    - Standalone environment

        Process Center

        PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\process-center\config\system

        Performance Data Warehouse

        PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\performance-data-warehouse\config\system

    - Network Deployment environment

        Process Center (For every single server or cluster member configured with Process Center)

        DMGR-PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\process-center\config\system

        Process Center (Cluster) - Process Center is always configured on AppCluster

        DMGR-PROFILE-DIR\config\cells*cellName*\clusters*clusterName*\process-center\config\system

        Performance Data Warehouse (For every single server or cluster member configured with Process Center)

        PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\performance-data-warehouse\config\system

        Performance Data Warehouse (Cluster) - Performance Data Warehouse is always configured on AppCluster or SupportCluster

        DMGR-PROFILE-DIR>\config\cells*cellName*\clusters*clusterName*\performance-data-warehouse\config\system

    Process Server: The 98Database.xml configuration file locations:

    - Standalone environment

        Process Server

        PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\process-server\config\system

        Performance Data Warehouse

```
PROFILE-DIR\config\cells\cellName\nodes\nodeName\servers\serverName\performance-data-warehouse\config\system
```

- Network Deployment environment

    Process Server (For every single server or cluster member configured with Process Center)

    ```
    DMGR-PROFILE-DIR\config\cells\cellName\nodes\nodeName\servers\serverName\process-server\config\system
    ```

    Process Server (Cluster) - Process Server is always configured on AppCluster

    ```
    DMGR-PROFILE-DIR\config\cells\cellName\clusters\clusterName\process-server\config\system
    ```

    Performance Data Warehouse (For every single server or cluster member configured with Process Center)

    ```
    PROFILE-DIR\config\cells\cellName\nodes\nodeName\servers\serverName\performance-data-warehouse\config\system
    ```

    Performance Data Warehouse (Cluster) - Performance Data Warehouse is always configured on AppCluster or SupportCluster

    ```
    DMGR-PROFILE-DIR>\config\cells\cellName\clusters\clusterName\performance-data-warehouse\config\system
    ```

3. In a network deployment environment, you must synchronize the nodes that contain Process Center, Process Server, or Performance Data Warehouse cluster members.

    a. In the administrative console, click **System administration** > **Nodes**.

    b. Select all of the nodes and click **Full Resynchronize**.

    c. Stop and restart all of the clusters and servers.

Configuring an LDAP security provider

To use an additional Lightweight Directory Access Protocol (LDAP) security provider in IBM Business Process Manager, you must add the provider to the federated repository.

By default, IBM Business Process Manager is configured with a single federated repository that contains only the internal IBM BPM security provider. Additionally, you can configure an LDAP security provider, such as Microsoft Active Directory, with WebSphere federated repository.

To configure an LDAP security provider in IBM Business Process Manager, complete the following steps:

1. Log on to WebSphere administrative console as tw_user. The default password for the tw_user account is tw_user.

2. Click **Security** > **Global security**.

3. Under **User account repository**, click **Available realm definitions** > **Federated repositories**.

4. Click **Configure**.

5. Under **Related items**, click **Manage repositories**.

6. Click **Add** and specify parameters for the provider that you want to add. For example, to add Microsoft Active Directory, specify values such as the following examples:

Repository identifier	**SALOMLDAP // change to suit**
Directory type	**Microsoft Windows Active Directory**
Primary host name	**10.1.5.18**
Bind distinguished name	**cn=LDAP_USER,CN=Users,DC=COMPANYQA,DC=com**
Bind password	**pwsaaswp**

7. Click **OK** and then **Save**.

8. Click **Add Base entry to Realm** and specify values such as the following examples:

Distinguished name of a base entry that uniquely identifies this set of entries in the realm	**cn=Users,DC=COMPANYQA,DC=com**
Distinguished name of a base entry in this repository	**cn=Users,DC=COMPANYQA,DC=com**

9. Click **OK** and then **Save**.

10. On the Global Security page, click **Set as current** and then click **Apply**.

11. Shut down all IBM BPM servers. For a network deployment environment, you can shut down all the servers that are members of the same cluster at the same time by stopping the cluster.

12. Make sure that no duplicate users exist in the IBM BPM internal security provider and the security provider that you just added. If duplicate users exist, errors will occur when you run IBM Business Process Manager product components.

13. Start all IBM BPM servers. For a network deployment environment, you can start all the servers in a cluster (cluster members) in one action by starting the cluster.

    If you have configured a server cluster for your runtime environment, stop and restart all servers in the cluster.

Related tasks:

"Setting up user accounts"
You can use an internal security provider in IBM Business Process Manager to create and maintain users and groups. Additionally, you can combine the internal security provider with an external security provider such as Lightweight Directory Access Protocol (LDAP).

Setting up user accounts

You can use an internal security provider in IBM Business Process Manager to create and maintain users and groups. Additionally, you can combine the internal security provider with an external security provider such as Lightweight Directory Access Protocol (LDAP).

The internal security provider in IBM Business Process Manager includes several default users and groups. When you use the internal security provider with an external provider, the users and groups from both providers are available for selection.

Important: Do not remove the default IBM BPM administrator account, tw_admin, or the default administrator group, tw_admins. You cannot administer servers and users without these default accounts. To change the password for the tw_admin account, see Managing default users and groups.

The best way to manage security in IBM BPM is by using groups. For example, to grant administrative access to IBM BPM, add preexisting groups of users from your external security provider to tw_admins, which is a IBM BPM group whose members have administrative access to IBM BPM product components by default. Then, when changes are required, you can add or remove individual users from the groups that exist in your external security provider. This practice ensures that the security maintenance that you perform in your external provider does not require additional work in IBM BPM.

To set up your user accounts when you initially configure IBM BPM servers, complete the following steps:

1. To access the Process Admin Console, in your web browser, go to **http://[host_name]:[port]/ ProcessAdmin** . Log on using the default administrative account (tw_admin) and the default password (tw_admin).

2. Optional: Create the different types of users and groups that your users will need in IBM BPM.

3. Add members to the default IBM BPM groups or groups that you have created. You can add users and groups from any configured external provider, such as LDAP, and internal IBM BPM users and groups.

4. Add the users and groups who need access to the repository, and grant administrative access to the appropriate users. Then establish who can access each process application and toolkit. The best way to grant access to the repository is to add members to the default group, tw_authors.

Related tasks:

"Configuring an LDAP security provider" on page 579
To use an additional Lightweight Directory Access Protocol (LDAP) security provider in IBM Business
Process Manager, you must add the provider to the federated repository.

Changing passwords after installation

You can use the Process Admin console, the WebSphere Application Server administrative console, and
configuration files to change the default password for the **tw_admin** and **tw_user** users in stand-alone or
ND cluster environments.

If you are using the internal security provider, use the following procedures to maintain user accounts. If
you configured a different type of user registry, you must maintain user accounts in the user interface for
that user registry.

Related tasks:

"Encrypting passwords" on page 584
When you install IBM Business Process Manager product components, passwords in the installed files are
generally encrypted by default. If you need to change these passwords, you can use the IBM BPM
EncryptPassword utility to encrypt the new passwords.

"Customizing the settings used by Process Server to connect to Process Center" on page 573
After you install and configure IBM Business Process Manager, you can change the Process Server from
an offline server to a Process Center connected server, and vice versa.

Changing the tw_admin password in a stand-alone environment:

You can use the Process Admin Console and the `100Custom.xml` configuration file to change the default
password for the **tw_admin** user in a stand-alone environment.

Important: If you are using the internal security provider, use the Process Admin Console to maintain
user accounts. If you configured a different type of user registry, you must maintain user accounts in the
user interface for that user registry.

For example, if you used federated repositories with the file-based repository, which is the default
repository in a WebSphere Application Server Network Deployment environment, use the WebSphere
Application Server administrative console to make changes to user accounts.

For example, if you use federated repositories with one or more LDAP repositories, use the LDAP user
interface to make changes to user accounts. If **tw_admin** is a user from **LDAP** for example, then the
password must be changed in the LDAP.

1. Log on to the Process Admin Console using the administrative account. Use the default **tw_admin**
   administrative account and the default **tw_admin** password.
2. Navigate to **User Management** > **Maintain User Settings** and change the password for the
   tw_admin user account.
3. Log out of the Process Admin Console.
4. Run the following command to generate an encrypted value for the new password: **java -cp WAS
   HOME\BPM\Lombardi\lib\utility.jar com.lombardisoftware.utility.EncryptPassword custom
   password**
5. Stop all process server or process center servers in your environment.
6. Locate the `100Custom.xml` file. For a stand-alone server environment, the file path is:
   `<stand-alone-profile-root>\config\cells\<cell-name>\nodes\<stand-alone-node-name>\servers\`
   `<server-name>\server_type\config\100Custom.xml`
7. Edit the `100Custom.xml` file. Edit the following section to look like this example:
   ```
   <server merge="mergeChildren">
       <bpd-engine merge="mergeChildren">
           <system-lane-users merge="replace">
   ```

```
                  <user login="tw_admin" password-encrypted="true" password="1TDVSsD1GFTYZxcM3TCLfQ==:COoxNinhGEedXUdnW5kISQ==
           </system-lane-users>
      </bpd-engine>
   </server>
```

8. Save your changes.

9. Locate the 80EventManager.xml file. The 80EventManager.xml is in the following directory:
   PROFILE_HOME\config\cells\cell_name\nodes\node_name\servers\server_name\server_type\config\
   system\99Local.xml. The value of server_type is process-server or process-center.

10. Copy the following lines from the 80EventManager.xml file to the 100Custom.xml file:

    ```
    <event-manager merge="mergeChildren">
       <password merge="replace">[new-password]</password>
       <password-encrypted merge="replace">true</password-encrypted>
    </event-manager>
    ```

11. Update the RunAs roles. From the Administrative Console, click **Applications** > **Enterprise
    Applications** > *IBM BPM Teamworks application* > **User RunAs roles**. Change the password for the
    roles with which the **tw_admin** administrative user name is associated and apply the change. For
    example, if the **twem** and **twuser** roles are associated with the **tw_admin** user name, change the
    password for those roles.

Changing the tw_user password in a stand-alone environment:

You can use the Process Admin Console and WebSphere Application Server Administrative Console to
change the default password for the **tw_user** user in a stand-alone environment.

Important: If you are using the internal security provider, use the Process Admin Console to maintain
user accounts. If you configured a different type of user registry, you must maintain user accounts in the
user interface for that user registry.

For example, if you used federated repositories with the file-based repository, which is the default
repository in a WebSphere Application Server Network Deployment environment, use the WebSphere
Application Server administrative console to make changes to user accounts.

For example, if you use federated repositories with one or more LDAP repositories, use the LDAP user
interface to make changes to user accounts. If **tw_user** is a user from **LDAP** for example, then the
password must be changed in the LDAP.

1. Log in to the Process Admin Console. Log in using the default **tw_admin** administrative account and
   the default **tw_admin** password.

2. Navigate to **User Management** > **Maintain User Settings** and change the password for the **tw_admin**
   user account.

3. Change the password for the **tw_user** account in the Process Admin Console.

4. Log out of the Process Admin Console.

5. Navigate to **Enterprise Applications** > **User RunAs Roles** > **IBM_BPM_PerformacneDW**.

6. Change the password for the roles with which the **tw_user** user name is associated and apply the
   change. For example, if the **twem** and **twuser** roles are associated with the **tw_user** user name, change
   the password for those roles.

7. Save the changes to the master configuration.

8. Restart the server.

Changing the tw_admin password in an ND cluster environment:

You can use the WebSphere Application Server administrative console and the 100Custom.xml
configuration file to change the default password for the **tw_admin** user in an ND cluster environment.

Important: If you are using the internal security provider, use this procedure to maintain user accounts. If you configured a different type of user registry, you must maintain user accounts in the user interface for that user registry.

For example, if you used federated repositories with the file-based repository, which is the default repository in a WebSphere Application Server Network Deployment environment, use the WebSphere Application Server administrative console to make changes to user accounts.

For example, if you use federated repositories with one or more LDAP repositories, use the LDAP user interface to make changes to user accounts. If **tw_admin** is a user from **NDCluster LDAP** for example, then the password must be changed in the NDCluster LDAP.

1. Log in to the WebSphere Application Server administrative console. Log in using the default **tw_admin** administrative account and the default **tw_admin** password.

2. Navigate to **Users and Groups** > **Manage Users** and locate the **tw_admin** user account.

3. Change the password for the **tw_admin** user account.

4. Log out of the administrative console.

5. Run the following command to generate an encrypted value for the new password:

   ```
   java -cp WAS HOME\BPM\Lombardi\lib\utility.jar com.lombardisoftware.utility.EncryptPassword custom password
   ```

   The system returns the encoded password, as shown in the following example:
   `1TDVSsD1GFTYZxcM3TCLfQ==:COoxNinhGEedXUdnW5kISQ==`

6. Stop all process server or process center servers in your environment.

7. Locate the `100Custom.xml` file. For a Network Deployment environment, the file path is:
   `<DMGR-profile-root>\config\cells\<cell-name>\nodes\<custome-node-name>\servers\<server-name>\server_type\config\100Custom.xml`

8. Edit the `100Custom.xml` file. Edit the following section to look like this example:

   ```
   <server merge="mergeChildren">
       <bpd-engine merge="mergeChildren">
          <system-lane-users merge="replace">
             <user login="tw_admin" password-encrypted="true" password="TDVSsD1GFTYZxcM3TCLfQ==:COoxNinhGEedXUdnW5kISQ=
          </system-lane-users>
       </bpd-engine>
   </server>
   ```

9. Save your changes.

10. Locate the `80EventManager.xml` file. The `80EventManager.xml` is in the following directory:
    `PROFILE_HOME\config\cells\cell_name\nodes\node_name\servers\server_name\server_type\config\system\99Local.xml`. The value of `server_type` is process-server or process-center.

11. Copy the following lines from the `80EventManager.xml` file to the `100Custom.xml` file:

    ```
    <event-manager merge="mergeChildren">
       <password merge="replace">[new-password]</password>
       <password-encrypted merge="replace">true</password-encrypted>
    </event-manager>
    ```

12. Update the RunAs roles. From the Administrative Console, click **Applications** > **Enterprise Applications** > **IBM BPM Teamworks application** > **User RunAs roles**. Change the password for the roles with which the **tw_admin** administrative user name is associated and apply the change. For example, if the **twem** and **twuser** roles are associated with the **tw_admin** user name, change the password for those roles.

Changing the tw_user password in an ND cluster environment:

You can use the WebSphere Application Server administrative console to change the default password for the **tw_user** user in an ND cluster environment.

Important: If you are using the internal security provider, follow this procedure. If you configured a different type of user registry, you must maintain user accounts in the user interface for that user registry.

For example, if you used federated repositories with the file-based repository, which is the default repository in a WebSphere Application Server Network Deployment environment, use the WebSphere Application Server administrative console to make changes to user accounts.

For example, if you use federated repositories with one or more LDAP repositories, use the LDAP user interface to make changes to user accounts. If **tw_user** is a user from **NDCluster LDAP** for example, then the password must be changed in the NDCluster LDAP.

1. Log in to the WebSphere Application Server administrative console and change the **tw_user** password.
2. Navigate to **Enterprise Applications** > **User RunAs Roles** > **IBM_BPM_PerformacneDW**.
3. Change the password for the roles with which the **tw_user** user name is associated and apply the change. For example, if the **twem** and **twuser** roles are associated with the **tw_user** user name, change the password for those roles.
4. Save the changes to the master configuration.
5. Resynchronize the nodes.
6. Restart the nodes.

Encrypting passwords

When you install IBM Business Process Manager product components, passwords in the installed files are generally encrypted by default. If you need to change these passwords, you can use the IBM BPM EncryptPassword utility to encrypt the new passwords.

To encrypt passwords, complete the following steps:

1. From a command prompt, go to the **[IBM_BPM_home]/BPM/Lombardi/lib** directory.
2. Run the **java -cp utility.jar com.lombardisoftware.utility.EncryptPassword <password>** command, where **<password>** is the password that you want to encrypt.

   For example, run the following command:

   ```
   java -cp utility.jar com.lombardisoftware.utility.EncryptPassword JohnDoe
   ```

   The result is the following code:

   ```
   taVCmTLTWWgkTvfvavu/7g==:sROM4ZbvqRDFYMobWXqvwg==
   ```

   Important: If you are running the utility from a different directory, replace **utility.jar** with the exact path to the **utility.jar** file.
3. If the utility fails with a **ClassNotFound** exception, set your Java home to the following directory before you run the utility again: **[IBM_BPM_home]/AppServer/java/bin/java**

   For example:

   > Linux UNIX **java -cp /opt/[IBM_BPM_home]/BPM/Lombardi/lib/utility.jar com.lombardisoftware.utility.EncryptPassword JohnDoe**

   > Windows **java -cp c:\[IBM_BPM_home]\BPM\Lombardi\lib\utility.jar com.lombardisoftware.utility.EncryptPassword JohnDoe**

4. Replace the existing encrypted password in your IBM BPM configuration files, such as
   `PROFILE_HOME\config\cells\cell_name\nodes\node_name\servers\server_name\process-center\config100Custom.xml`.
5. If you must change encrypted passwords in IBM BPM configuration files such as **98Database.xml**, **80EventManager.xml**, and **99Local.xml**, copy the necessary sections from those files to the **100Custom.xml** file.

Restriction: You cannot use the EncryptPassword utility to decrypt passwords that are already encrypted.

Related tasks:

"Changing passwords after installation" on page 581
You can use the Process Admin console, the WebSphere Application Server administrative console, and configuration files to change the default password for the **tw_admin** and **tw_user** users in stand-alone or ND cluster environments.

Starting the First steps console

After you install IBM Business Process Manager Advanced, you can use the First steps console to verify the installation, start the Profile Management Tool, access product documentation, or direct elements such as servers and administrative consoles related to individual profiles.

A generic version of the console and a version for each profile in your installation are available. Options on each console are displayed dynamically, depending on features you install and the availability of elements on each operating system. Options might include verifying your installation, starting or stopping the server or deployment manager, accessing the administrative console, starting the Profile Management Tool, and accessing the product documentation.

You will usually want to start the version for the profile. The following sections provide detailed information on starting a First steps console based on its version and the platform used on the system:

- "Starting the First steps console for a profile on Linux, UNIX, and Windows platforms"
- "Starting the generic version of the First steps console" on page 586

Restrictions: The First steps console might not start if you use Mozilla as your default browser and it is installed in a location containing a space in the path name. To rectify this problem, perform one of these actions:

- Install Mozilla into a location without a space in the path name.
- Alter the registry key to remove the space.
- Temporarily set Internet Explorer as the default browser and then set Mozilla as the default browser. This approach automatically removes the space from the registry key.

Starting the First steps console for a profile on Linux, UNIX, and Windows platforms

`Linux` `UNIX` `Windows` Start a First steps console for a profile by performing the following steps:

1. Open a command window.
2. Change to the following directory (where *install_root* represents the installation location of the IBM Business Process Manager or WebSphere Enterprise Service Bus profile (*install_root*/profiles/ *profile_name*/):
   - For IBM Business Process Manager profiles:
     - `Linux` `UNIX` *profile_root*/firststeps/*bpmPC or bpmPS*
     - `Windows` *profile_root*\firststeps*bpmPC or bpmPS*
   - For WebSphere Enterprise Service Bus profiles:
     - `Linux` `UNIX` *profile_root*/firststeps/esb
     - `Windows` *profile_root*\firststeps\esb
3. Issue the **firststeps** command to start the console:
   - `Linux` `UNIX` ./firststeps.sh
   - `Windows` firststeps.bat

Fast path:

You can also start a version of the First steps console associated with a profile by performing one of the following tasks:

- Check the First steps console check box on the Profile creation complete or Profile augmentation complete panel at the end of the profile creation or augmentation process.

- Windows Click **Start** > **Programs** > **IBM** > **BPM Advanced 7.5** > **Profiles** > *profile_name* > **First steps**.

Starting the generic version of the First steps console

Start the generic version of the First steps console by performing the following steps.

1. Open a command window.
2. Change to the following directory:

   - Linux UNIX *profile_root*/firststeps/*bpmPC or bpmPS*

   - Windows *profile_root*\firststeps*bpmPC or bpmPS*

   The variable *install_root* represents the location of the IBM Business Process Manager installation on Linux, UNIX, and Windows systems.

3. Issue one of the following commands to start the console:

   - Linux UNIX ./firststeps.sh

   - Windows firststeps.bat

Fast path:

Windows You can also start the generic version of the console on Windows platforms by clicking **Start** > **Programs** > **IBM** > **BPM Advanced 7.5** > **First steps**.