IBM FileNet P8
Version 4.5.1

Plan and Prepare Your Environment for IBM FileNet P8: Process Engine for installation on Microsoft Windows with Oracle, IBM WebSphere Application Server, and Windows Active Directory

IBM ®

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Contents

ibm.com and related resources

Product support and documentation are available from ibm.com.

Support and assistance

Product support is available on the Web. Click Support from the product Web site at:

FileNet Content Manager Support
> http://www.ibm.com/software/data/content-management/filenet-content-manager/support.html

Information center

You can view the product documentation in an Eclipse-based information center that you can install when you install the product. By default, the information center runs in a Web server mode that other Web browsers can access. You can also run it locally on your workstation. See the information center at http://publib.boulder.ibm.com/infocenter/p8docs/v4r5m1/index.jsp.

PDF publications

You can view the PDF files online using the Adobe Acrobat Reader for your operating system. If you do not have the Acrobat Reader installed, you can download it from the Adobe Web site at http://www.adobe.com.

See the following PDF publications Web sites:

Product	Web site
Product Documentation for FileNet P8 Platform	http://www.ibm.com/support/docview.wss?rs=3278&uid=swg27010422

"How to send your comments"
Your feedback is important in helping to provide the most accurate and highest quality information.

"Contacting IBM" on page vi
To contact IBM customer service in the United States or Canada, call 1-800-IBM-SERV (1-800-426-7378).

How to send your comments

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Send your comments by using the online reader comment form at https://www14.software.ibm.com/webapp/iwm/web/signup.do?lang=en_US&source=swg-rcf.

Consumability survey

You are invited to tell IBM how to improve the consumability of software products. If you want to help IBM make IBM® FileNet® P8 easier to use, take the Consumability Survey at http://www.ibm.com/software/data/info/consumability-survey/.

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Planning and preparing for IBM FileNet P8 installation

To prepare to install IBM FileNet P8 Platform, you must review the planning information before you begin. You must also complete the prerequisite tasks assigned to the various roles.

"Planning the installation"
You must review the installation planning information before your IBM FileNet P8 Platform installation so that you know what kind of deployments are supported, understand how the tasks in the installation tasks are organized by role, and know how to use the Installation and Upgrade Worksheet.

"Performing the required installation preparation tasks" on page 7
To efficiently carry out the required installation preparation tasks, you must assign your staff to carry out the tasks that are organized by administrative role.

Planning the installation

You must review the installation planning information before your IBM FileNet P8 Platform installation so that you know what kind of deployments are supported, understand how the tasks in the installation tasks are organized by role, and know how to use the Installation and Upgrade Worksheet.

"FileNet P8 Platform sample architecture"
You can distribute IBM FileNet P8 Platform components and expansion products across a variety of machines.

"Planning your deployment" on page 3
Content Engine, Process Engine, and Application Engine, or Workplace XT, can all be installed as standalone, single instance applications, or as multiple instances with different names on the same server, or in a cluster.

"Definition of installation roles" on page 4
The tasks in this guide and the rows in the Installation and Upgrade Worksheet are organized by administrative roles. Your organization might have different roles, and some of the responsibilities of listed roles will vary from those assigned by default in this documentation.

"Using the installation and upgrade worksheet" on page 5
The Installation and Upgrade Worksheet is a Microsoft® Excel spreadsheet (p8_worksheet.xls). The worksheet describes the properties and parameters required to complete IBM FileNet P8 installation, upgrade, and configuration programs, and provides a way to record the values you assign to these properties and parameters.

FileNet P8 Platform sample architecture

You can distribute IBM FileNet P8 Platform components and expansion products across a variety of machines.

"Baseline configuration with expansion components" on page 2
A production environment includes required components plus one or more optional expansion components.

"Sample development architecture" on page 2
To provide an application development configuration, you can install the components that the application is based on and also the required API toolkits on developer workstations.

"Sample demonstration architecture" on page 3
You can install required and any expansion components on a single server in order to support demonstrations, proof-of-concepts, and single-server development. Because Enterprise Manager runs only on Windows, a single-server installation that includes this administration tool must be on a Windows server.

Baseline configuration with expansion components

A production environment includes required components plus one or more optional expansion components.
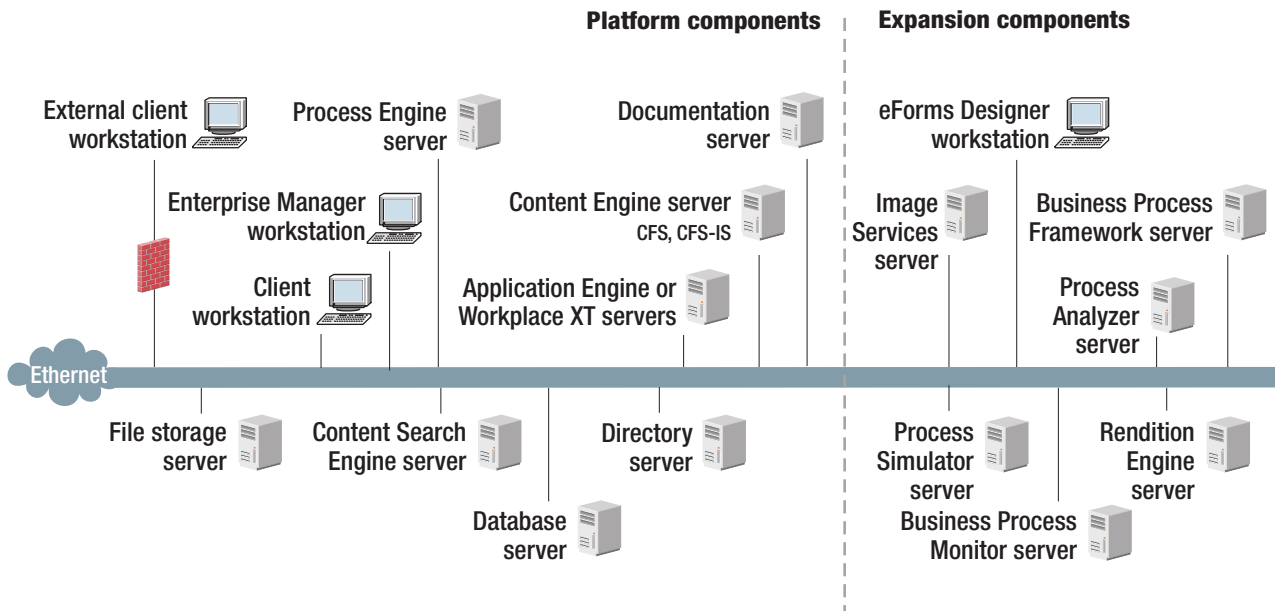
Figure 1. Baseline configuration with expansion components

To understand this graphic, keep in mind the following details:

- You must set up Content Engine, Application Engine, and the documentation server on application servers.
- IBM FileNet P8 Platform supports several different operating systems. However, Enterprise Manager runs only on Windows.
- The graphic does not show components in a high availability or clustered configuration.
- For information about collocating components on a single server, see *IBM FileNet P8 Hardware and Software Requirements*.
- Not all expansion components are shown, for example IBM FileNet P8 Portlets and Image Services Resource Adapter. Check with your service representative for availability of other expansion products.

Sample development architecture

To provide an application development configuration, you can install the components that the application is based on and also the required API toolkits on developer workstations.

Refer to the IBM FileNet P8 Developer Help topic **IBM FileNet P8 Documentation** → **Developer Help** → **Developer Roadmap** → **Introduction** for information on setting up your development environment and installing the IBM FileNet P8 API toolkits.

Sample demonstration architecture

You can install required and any expansion components on a single server in order to support demonstrations, proof-of-concepts, and single-server development. Because Enterprise Manager runs only on Windows, a single-server installation that includes this administration tool must be on a Windows server.

Installing many FileNet P8 components on the same server is likely to affect system performance. For more information, see the *IBM FileNet P8 Hardware and Software Requirements* and the *IBM FileNet P8 Performance Tuning Guide*.

Planning your deployment

Content Engine, Process Engine, and Application Engine, or Workplace XT, can all be installed as standalone, single instance applications, or as multiple instances with different names on the same server, or in a cluster.

"Application server planning considerations"
To prepare your application servers, you must carry out certain tasks including creating administrative accounts, specifying environmental variables, and making sure your JDBC drivers are at a supported level.

Application server planning considerations

To prepare your application servers, you must carry out certain tasks including creating administrative accounts, specifying environmental variables, and making sure your JDBC drivers are at a supported level.

Content Engine and Application Engine are J2EE application server-based applications. (Process Engine is not.) You must install Content Engine and Application Engine in a homogeneous J2EE environment in which all of your application servers and their version numbers are identical for both components.

Assuming that a user application is required for your system and that you have not built or customized one using the IBM FileNet P8 API toolkits, you can install either of the following general user interfaces:
* Workplace XT
* Application Engine /Workplace

Even if you have your own customized application, it is a best practice to install one of these applications for testing and support purposes. The applications must use Enterprise Java Bean (EJB) transport.

If the application server where Content Engine will be deployed is running on a 32-bit JVM, it is a best practice to create no more than 75 Content Engine object stores. On a 64-bit JVM, it is a best practice to create no more than 150 Content Engine object stores.

Content Engine is a resource-intensive enterprise application. Running Content Engine and other J2EE applications on the same machine is possible but not a best practice. Other J2EE applications will compete with Content Engine for the same CPU, memory, and disk I/O resources, and increase the complexity of the installation and the risk of the deployment, because configurations will not match what has been qualified by IBM FileNet P8 Engineering.

Although you might need to host Content Engine and other applications on the same machine, it is preferable to host Content Engine on its own machine or logical partition. If an architecture requires Content Engine and a non-P8 J2EE application to be on the same machine, be sure to thoroughly test the configuration in your integration environment before deploying them into production.

See the IBM FileNet P8 help topic **System Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Authentication** for reference information about support for EJB and Web Services transports.

Definition of installation roles

The tasks in this guide and the rows in the Installation and Upgrade Worksheet are organized by administrative roles. Your organization might have different roles, and some of the responsibilities of listed roles will vary from those assigned by default in this documentation.

Installation administrator
- Runs IBM FileNet P8 installers during initial setup.
- Runs the Configuration Manager tool during initial setup, followed by starting IBM FileNet Enterprise Manager.
- Runs IBM FileNet P8 Upgrade programs during upgrades.
- Abbreviated as IA. Responsible for coordinating the information described in this worksheet. The information itself will require the input from the other roles.

The role of IA is usually filled by an IBM FileNet Certified Professional (FCP).

Information technology administrator
- Responsible for the networking and operating systems settings required by IBM FileNet P8.
- Responsible for performing certain security configurations.
- Abbreviated as ITA. Responsible for providing the information in the rows in the *Installation and Upgrade Worksheet* with a value of ITA in the Role column.

Security administrator
- Responsible for configuring the directory servers required by IBM FileNet P8 components, including Content Engine and Application Engine.
- Creates and maintains directory server user and group accounts.
- Abbreviated as SA. Responsible for providing the information in the rows in the *Installation and Upgrade Worksheet* with a value of SA in the Role column.

Database administrator
- Creates, configures, maintains database installations and database or table spaces.
- Responsible for creating database accounts needed by IBM FileNet P8.
- For purposes of this documentation, the database administrator is expected to have responsibilities regarding the JDBC data sources.
- Abbreviated as DBA. Responsible for providing the information in the rows in the *Installation and Upgrade Worksheet* with a value of DBA in the Role column.

Application server administrator

- Responsible for providing the application servers required by IBM FileNet P8.
- Responsible for application server administrative accounts.
- Abbreviated as ASA. Responsible for providing the information in the rows in the *Installation and Upgrade Worksheet* with a value of ASA in the Role column.

IBM FileNet P8 administrator

- This role designation actually refers to the administrator or administrators who perform regular maintenance of Content Engine, Process Engine Application Engine, Workplace or Workplace XT.
- The administrator who logs on to Enterprise Manager by using the gcd_admin account or an object_store_admin account is considered an IBM FileNet P8 administrator.
- Abbreviated as P8A. Responsible for providing the information in the rows of the *Installation and Upgrade Worksheet* with a value of P8A in the Role column.

E-mail Administrator

- Creates an e-mail account that will be used to configure the **Notification** tab of the Process Task Manager so that Process Engine can send e-mail notifications to end users. (Required only if you use this feature.)
- Abbreviated as EA.

Related concepts

"Using the installation and upgrade worksheet"
The Installation and Upgrade Worksheet is a Microsoft Excel spreadsheet (p8_worksheet.xls). The worksheet describes the properties and parameters required to complete IBM FileNet P8 installation, upgrade, and configuration programs, and provides a way to record the values you assign to these properties and parameters.

"IT administrator installation tasks" on page 8
The Information Technology administrator must prepare the network and operating systems, and carry out certain security configurations to prepare your environment for IBM FileNet P8 Platform.

"Security administrator installation tasks" on page 15
The Security administrator must prepare the security environment for IBM FileNet P8 Platform, including planning the security environment, configuring the directory server, and creating accounts.

"Application Server administrator installation tasks" on page 38
The Application Server Administrator must prepare the application servers for IBM FileNet P8 Platform, including planning deployment, creating administrative accounts, and configuring JDBC drivers for both Content Engine and Application Engine.

Related tasks

"Database administrator installation tasks" on page 23
The Database administrator must prepare the databases required for IBM FileNet P8, including gathering information about data sources, creating databases and database accounts, and installing client software.

Using the installation and upgrade worksheet

The Installation and Upgrade Worksheet is a Microsoft Excel spreadsheet (p8_worksheet.xls). The worksheet describes the properties and parameters

required to complete IBM FileNet P8 installation, upgrade, and configuration programs, and provides a way to record the values you assign to these properties and parameters.

Administrators who are preparing the environment for installation or upgrade of IBM FileNet P8 components must use the worksheet during their preparation tasks to record the appropriate values and provide them to the Installation Administrator who runs the installation or upgrade programs.

Some of the features of the Installation and Upgrade Worksheet are:
- **Instructions**: describes the worksheet and includes a button that runs the Customize Worksheet macro.
- The two highlighted columns, **Property or Parameter** and **ENTER YOUR VALUE HERE**, provide the simplest view of the requirement. The others add identifying information and help you sort and filter the rows usefully.
- The **Role** column assigns each row to an administrator and uses the following acronyms:
  - ITA: Information Technology Administrator
  - ASA: Application Server Administrator
  - DBA: Database Administrator
  - SA: Security Administrator
  - P8A: IBM FileNet P8 Administrator
- Property definitions are contained in the column titled **Description**.
- Some rows, though not all, contain a hyperlink in the **IC help link** column. Click this hyperlink to run a query against the IBM Information Center, which opens with the Search Results pane showing the topics that contain the words in the query phrase. Browse the search results until you have enough information to be able to enter a value in the Worksheet row.

  "Running the Customize Worksheet macro"
  The Customize Worksheet macro lets you extract only those rows that describe your environment.

  "Autofiltering and sorting the Worksheet" on page 7
  There are several ways to organize the Worksheet to make finding properties and entering values easier.

Running the Customize Worksheet macro
The Customize Worksheet macro lets you extract only those rows that describe your environment.

Important: For support of the full range of built-in filter and macro features, use Microsoft Excel to view the Installation and Upgrade Worksheet file. You can use other spreadsheet programs to view the file; however, filter and macro support can vary. For example, in Calc from OpenOffice.Org, the column filters work as expected, but the Customize Worksheet button does not.
To run the Customize Worksheet macro:
1. Open the Installation and Upgrade Worksheet (`p8_worksheet.xls`) and click the **Instructions** worksheet (also called a tab).
2. Scroll down until you see the button representing the Customize Worksheet macro. Click the button.
3. Select the components and options that describe the environment you are preparing for IBM FileNet P8.
   - Installation or Upgrade

- FileNet P8 Components
- Application Server type
- Operating system
- Database type
- Directory Server type
- Number of object stores (adds new sets of rows for creating additional data sources)
- Name of customized sheet

4. Click **OK**. The macro copies the rows that fulfill your selection criteria into a new worksheet with the name you entered. Enter the values for your environment into this new worksheet.

5. Click the name of the new worksheet at the bottom of the Excel window. Add your preparation values into this new worksheet.

6. Notice that the new worksheet has buttons at the top titled **Show Installer View** and **Show Full View**, depending on its state. The **Show Installer View** displays only those columns that you need while running installation or configuration programs.

Autofiltering and sorting the Worksheet

There are several ways to organize the Worksheet to make finding properties and entering values easier.

AutoFiltering is a quick way to display only those rows that meet a certain criteria. To use AutoFilter:

1. Make sure AutoFiltering is enabled. (Select the entire row with the column headers, then click **Data → Filter → Autofilter**.) AutoFilter arrows will appear to the right of the column labels.

2. Click the **AutoFilter** arrow in the **Installation or Configuration Program** column header and select the program you are interested in (for example, PE installer).

3. Click the **AutoFilter** arrow in the **Setup Type** column header, select **Custom**, and specify **Setup Type contains Installation**.

4. For a custom AutoFilter, click the **AutoFilter** in any column header, select **Custom**, and specify Setup Type contains "Installation".

5. To turn off AutoFiltering in a column, click the column **AutoFilter** arrow and select **(All)**.

6. To reorder rows alphabetically, do a Sort:

   a. Click anywhere in a column, for example, Column A Role.

      The only possible values in the Role column are ASA, SA, DBA, ITA, and P8A. Sorting on Role therefore groups the rows by this attribute, in alphabetic order. Several other columns also have a limited number of possible values which means they can be usefully sorted.

   b. Click the **Sort Ascending** icon in the Excel toolbar, or use the **Data → Sort** menu command. The rows sort on Role.

      Sorting the Worksheet reassigns row numbers. If you refer to rows by number, be aware that row numbers change if you change the sort order.

Performing the required installation preparation tasks

To efficiently carry out the required installation preparation tasks, you must assign your staff to carry out the tasks that are organized by administrative role.

Some tasks require input that results from other preparation tasks performed by other administrator roles. While performing the tasks, record results in the *Installation and Upgrade Worksheet*. See the "Using the installation and upgrade worksheet" on page 5 topic for details.

To prepare the IBM FileNet P8 environment, perform the tasks assigned to the following roles.

"IT administrator installation tasks"
The Information Technology administrator must prepare the network and operating systems, and carry out certain security configurations to prepare your environment for IBM FileNet P8 Platform.

"Security administrator installation tasks" on page 15
The Security administrator must prepare the security environment for IBM FileNet P8 Platform, including planning the security environment, configuring the directory server, and creating accounts.

"Database administrator installation tasks" on page 23
The Database administrator must prepare the databases required for IBM FileNet P8, including gathering information about data sources, creating databases and database accounts, and installing client software.

"Application Server administrator installation tasks" on page 38
The Application Server Administrator must prepare the application servers for IBM FileNet P8 Platform, including planning deployment, creating administrative accounts, and configuring JDBC drivers for both Content Engine and Application Engine.

IT administrator installation tasks

The Information Technology administrator must prepare the network and operating systems, and carry out certain security configurations to prepare your environment for IBM FileNet P8 Platform.

- Review all rows assigned to the IT administrator (ITA) in the "Using the installation and upgrade worksheet" on page 5. While you complete the following preparation tasks, provide values for the rows that are appropriate to your installation.

  Tip: With the **Data** → **Filter** → **AutoFilter** command enabled, as it is by default in the shipping worksheet file (p8_worksheet.xls), perform the following actions to quickly see only the properties assigned to a particular role:
  – Click the **AutoFilter** drop-down arrow in the **Role** column header and select ITA.
  – Further filter the result set by clicking the **AutoFilter** drop-down arrow in any of the other columns and selecting a value or clear a filter by selecting **All**.

- If you are installing in a non-English environment, review the considerations and procedures in *IBM FileNet P8 Non-English Support Guide* before you begin your preparation tasks.

  "Creating Process Engine operating system accounts" on page 9
  Create new or designate existing operating system accounts for Process Engine, as shown in the following table.

  "Configuring Microsoft Windows" on page 12
  You must perform certain operating system procedures on all Windows-based servers where you will installFileNet P8, including planning for adequate disk

and temp space and port requirements, and installing required levels of Microsoft .NET Framework, Web Services Enhancements (WSE), or Windows® Communication Foundation (WCF).

"Configuring the network" on page 14
You must perform certain configurations on the network before installing IBM FileNet P8 Platform.

Creating Process Engine operating system accounts

Create new or designate existing operating system accounts for Process Engine, as shown in the following table.

Create several operating system users and groups for Process Engine.

Create the following users and groups:

User or group name	Description
The operating system user Process Engine uses to start and stop software and services (Windows): *fnsw*	This user is an operating system user that is used to start and stop Process Engine software and services. It can also optionally be used to install Process Engine. On Windows the IMS ControlService and Process Engine Services Manager service are configured to start with the *fnsw* user and the *fnsw_password* that is entered during Process Engine installation. Permissions on the Process Engine software directory are also set for this local user.
	Record this value in the Installation and Upgrade Worksheet.
	The Process Engine installation program asks if default users will be used or if aliases for the users will be defined. If a user name other than the default FNSW is defined, indicate to the Process Engine installation program that aliases will be defined. When prompted, provide this *fnsw* local user name to the installation program.Assign the *fnsw* local user to the following groups:
	• *fnusr*
	• *fnadmin*
	• *fnop*
	• Administrators (if it exists)
	The Process Engine installation program sets the following policies for this user automatically:
	• Act as part of the operating system
	• Adjust memory quotas for a process
	• Log on as a service
	• Replace a process level token
	If you choose to install Process Engine while logged on as this user, and run Process Engine SQL scripts from the installation program, ensure that this user has privileges in the database to run the scripts.

User or group name	Description
The password for the *fnsw* user (Windows): *fnsw_password*	This password is for the *fnsw* local user. Record this value in the Installation and Upgrade Worksheet. Process Engine installation program on Windows prompts for the *fnsw_password*. Leaving the field for the *fnsw_password* blank during Process Engine installation causes the installation program to set the default password, BPMtemp1pzwd. If this password does not match the operating system password, these services will not start. Set this password to never expire. Process Engine activity ceases if the *fnsw_password* expires.
An operating system group for Process Engine: *fnop*	This operating system group is a group account for Process Engine whose members have operator non-administrator privileges on Image Services used by Process Engine. Record this value in the Installation and Upgrade Worksheet. Add the *fnsw* user to this group. If you will install Process Engine or run Process Engine Windows services as either the *fnsw* domain user or *pe_install_user_domain*, you must add that domain user to this local group. The Process Engine installation asks if default users and groups will be used or if aliases will be defined. If a group name other than the default *fnop* is assigned, indicate to the Process Engine installation program that aliases will be defined and provide this name to the installation program as an alias for the default group.

User or group name	Description
An operating system group for Process Engine (Windows): *fnusr*	This operating system group is a group account for Process Engine whose members have non-administrator privileges on Process Engine files and databases.

Record this value in the Installation and Upgrade Worksheet.

The Process Engine installation asks if default users and groups will be used or if aliases will be defined. fnusr is the default group name. If a group name other than the default is assigned, indicate to the Process Engine installation program that aliases will be defined and provide this name to the installation program as an alias for the fnusr group.Assign the following users to the *fnusr* group:
• *fnsw*
• Administrator

If you will install Process Engine or run Process Engine Windows services as either the *fnsw* domain user or *pe_install_user_domain*, you must add that domain user to this local group. |
| An operating system group for Process Engine (Windows): *fnadmin* | This operating system group is a group account for Process Engine whose members have all privileges on Process Engine files and databases.

Record this value in the Installation and Upgrade Worksheet.

The Process Engine installation asks if default users and groups will be used or if aliases will be defined. fnadmin is the default group name. If a group name other than the default is assigned, indicate to the Process Engine installation program that aliases will be defined and provide this name to the installation program as an alias for the fmadmin group.Add the following users to this group:
• *fnsw*
• Administrator

If you will install Process Engine or run Process Engine Windows services as either the *fnsw* domain user or *pe_install_user_domain*, you must add that domain user to this local group. |

User or group name	Description
An operating system user for Process Engine (Windows): *pe_install_user_local*	This is a Windows operating system account that can be used to install Process Engine software who is a Windows administrator for the local machine. If you choose to install Process Engine while logged on as this user, and run Process Engine SQL scripts from the installation program, ensure that this user has privileges in the database to run the scripts. You can log on as the *fnsw* user or create this user or the *pe_install_user_domain* user (with the specified permissions) expressly for the purpose of running the Process Engine installation program.

Configuring Microsoft Windows

You must perform certain operating system procedures on all Windows-based servers where you will installFileNet P8, including planning for adequate disk and temp space and port requirements, and installing required levels of Microsoft .NET Framework, Web Services Enhancements (WSE), or Windows Communication Foundation (WCF).

"Configuring Windows for IBM FileNet P8 servers"
To configure Windows for IBM FileNet P8 servers, ensure the minimum disk and temporary space and determine the port requirements.

"Configuring Windows for Process Engine"
You must perform certain operating system procedures on all Windows-based servers where you will install Process Engine, including verifying TCP/IP settings and configuring the hosts file.

Configuring Windows for IBM FileNet P8 servers:

To configure Windows for IBM FileNet P8 servers, ensure the minimum disk and temporary space and determine the port requirements.

To configure Windows for IBM FileNet P8 servers:

- Ensure minimum required disk space and temporary space for installation. See IBM FileNet P8 4.5 Hardware and Software Requirements.
- Determine port requirements. Consult with the application server, database, and FileNet P8 administrators to determine port requirements for all the servers in your installation environment.

Configuring Windows for Process Engine:

You must perform certain operating system procedures on all Windows-based servers where you will install Process Engine, including verifying TCP/IP settings and configuring the hosts file.

"Verifying TCP/IP parameter settings (Windows)" on page 13
To verify TCP/IP parameter settings, log on as the administrator and run `regedit`.

"Adding inbound rules to the Windows 2008 firewall" on page 13
Configure inbound rules in the Windows 2008 firewall to allow the following Process Engine ports access.

"Configuring the /etc/hosts file"
Information related to Process Engine IP address, server name and optional load balancer must be entered into either the server's DNS table or the hosts file.

"Configuring Process Engine clients for ORB (Windows)" on page 14
Process Engine clients require either the IBM or the Sun Object Request Broker (ORB).

Verifying TCP/IP parameter settings (Windows):

To verify TCP/IP parameter settings, log on as the administrator and run `regedit`.

1. Log on as the Administrator user and run `regedit` to verify the following registry key values. These values are decimal. The default in Registry Editor is hexadecimal.

   ```
   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
   Tcpip\Parameters\MaxUserPort => 65534 (default = 5000)

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
   Tcpip\Parameters\TcpTimedWaitDelay => 90 (default = 240, or 4 min)
   ```

2. If necessary, add or modify a new DWORD value with the values as described above and save the changes.

Adding inbound rules to the Windows 2008 firewall:

Configure inbound rules in the Windows 2008 firewall to allow the following Process Engine ports access.

Port	Protocol
32768	TCP
32769	TCP
32770	UDP
32776	TCP
32777	TCP

Configuring the /etc/hosts file:

Information related to Process Engine IP address, server name and optional load balancer must be entered into either the server's DNS table or the hosts file.

For non-farmed configurations, the information can be in either the DNS table or the hosts file on the server. For farmed configurations, the information must be entered into the host file. In a farmed environment, entries must exist for every Process Engine server in the farm.

Process Engine can be configured to run with IPv4, IPv6, or a dual stack network.

Entries must use the following format for each Process Engine server. The load balancer name must also be associated with the appropriate server in a farmed configuration.

`IP_addr hostname load_balancer_name`

`IP_addr`
    The IP address of the Process Engine server.

hostname

> The corresponding host name, also referred to as the network name. This name must be < 32 characters and cannot contain any dots. Record this value in the Installation and Upgrade Worksheet as the network name and provide it to the Process Engine installation program.

load_balancer_name

> The name of the load balancer in a farmed configuration.

In the following example there are IPv4 and IPv6 addresses and cmepwin11 is the hostname (network name). If the server is configured for a dual stack network, both IPv4 and IPv6 entries must exist for the same hostname.

```
127.0.0.1        localhost
::1              localhost
2007:0:0:0:9:181:124:192  cmepwin11
#fe80::fda2:48f4:7106:2f19%10 cmepwin11
123.45.6.78  cmepwin11
```

Configuring Process Engine clients for ORB (Windows):

Process Engine clients require either the IBM or the Sun Object Request Broker (ORB).

This applies to the following configurations:
- J2EE application server clients such as Workplace or Workplace XT
- Content Engine when using the workflow subscription processor to launch workflows
- Non-J2EE or custom applications

Therefore, if you have Windows-based non-J2EE or custom applications, configure the Java installation on those servers with either the IBM or the Sun ORB.

Application server	Changes
IBM WebSphere® Application Server with the IBM JVM	No changes are required.

Configuring the network

You must perform certain configurations on the network before installing IBM FileNet P8 Platform.

"Prerequisites to configuring your network"
Perform the following prerequisite tasks in any order.

"Synchronizing time and date" on page 15
System users will experience a variety of problems if one or more servers are not synchronized with the rest of the system.

Prerequisites to configuring your network:

Perform the following prerequisite tasks in any order.
- Assign all IBM FileNet P8 servers a static IP address.
- Ensure TCP/IP settings. Verify TCP/IP configuration settings on all UNIX and Windows servers and Enterprise Manager clients intended for IBM FileNet P8 so that they can all communicate with one another.
- Ensure NetBIOS over TCP/IP is enabled on Windows.
- Ensure availability of required port numbers. Several port numbers are required by the various IBM FileNet P8 components.

Synchronizing time and date:

System users will experience a variety of problems if one or more servers are not synchronized with the rest of the system.

The Process Engine database server (the machine that hosts the database used by Process Engine) is considered the master time keeper; the UTC time of that machine is considered the correct time. The server hosting the Process Engine API and the server hosting Content Engine must have the UTC time set.

- To change the time on the machine hosting Process Engine, you must stop the server. In a farmed Process Engine system, if you want to change the time of one of the servers in the farm, you must stop only that server.
- To change the time in the machine hosting the Process Engine API, be sure it is not connected to any Process Engine system. If the API is connected to a Process Engine server, and you change the time, you will experience authentication errors, and you might need to log on again.
- If your Content Engine server is being used with a Process Engine server, and you change the time on the Content Engine server, you will experience authentication errors in Process Engine and you might need to log on again.

Security administrator installation tasks

The Security administrator must prepare the security environment for IBM FileNet P8 Platform, including planning the security environment, configuring the directory server, and creating accounts.

Review all rows assigned to the Security administrator (SA) in the Installation and Upgrade Worksheet. While you complete the following preparation tasks, provide values for the rows that are appropriate to your installation.

With the **Data** → **Filter** → **AutoFilter** command enabled, as it is by default in the shipping worksheet file (`p8_worksheet.xls`), perform the following actions to quickly see only the properties assigned to a particular Role:

- Click the **AutoFilter** drop-down arrow in the **Role** column header and select **SA**.
- Further filter the result set by clicking the **AutoFilter** drop-down arrow in any of the other columns and selecting a value or clear a filter by selecting **All**.

   "Security planning considerations"
   Information in this section is provided to assist in the security planning process but is not a complete description of any security feature or level of support.

   "Configuring directory server" on page 18
   The Security administrator must perform certain configurations on the directory server that will provide the authentication repository for your IBM FileNet P8 system.

   "Specifying IBM FileNet P8 accounts" on page 19
   Included in this topic you will find a set of tables that describe all the accounts you must specify to set up IBM FileNet P8 components.

Security planning considerations

Information in this section is provided to assist in the security planning process but is not a complete description of any security feature or level of support.

For complete information about IBM FileNet P8 security, consult the IBM FileNet P8 help topic **FileNet P8 Administration** → **Enterprise-wide Administration** →

FileNet P8 Security. The Security Help sections that are especially applicable to installation are Authentication, Directory Service Providers, and Users and Groups.

Authentication and authorization are separate processes.
> Authentication (logon security) is separate from authorization (object and process security). You must configure your JAAS login on the Content Engine application server so that any user or group that can successfully log on to IBM FileNet P8 resources can also be authorized to work within IBM FileNet P8 interfaces, using the Content Engine directory service provider connection.

> Configuration Manager captures configuration information to create your application server authentication provider; or you can use an authentication provider that already exists on the application server. Immediately following the initial Content Engine deployment, you will use Enterprise Manager to configure the Content Engine authorization by creating a Directory Configuration.

Logins are done through JAAS.
> IBM FileNet P8 uses Java Authentication and Authorization Service (JAAS) for authentication, which is a process that occurs between a J2EE client application, a J2EE application server, and one or more JAAS login modules. This process does not involve any IBM FileNet P8 code.

> IBM FileNet P8 Platform uses JAAS for authentication only, not for authorization on stored objects. Also, it does not support Java Security Manager.

Determine single sign-on (SSO) requirements.
> Content Engine ability to use JAAS-based authentication means that if a single sign-on (SSO) provider writes a JAAS LoginModule for a supported application server, then clients of IBM FileNet P8 applications hosted in that application server can use that SSO solution. Where necessary, this Information Center describes SSO configurations that you must make, for example to the web.xml file, but it does not provide specific instructions for installing or configuring your SSO provider. See the IBM FileNet P8 help topic **FileNet P8 Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Authentication** → **Single sign-on integrations via JAAS**. Also see *Single Sign-On Solutions for IBM FileNet P8* at ibm.com/redbooks for configuration information.

Determine Kerberos applicability.
> You can use Kerberos for SSO authentication between IBM FileNet Enterprise Manager and Content Engine, provided you use Windows Active Directory as the directory server. See the IBM FileNet P8 help topic **FileNet P8 Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Authentication** → **Kerberos for Content Engine**.

> For information, see the IBM FileNet P8 help topic **FileNet P8 Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Authentication**.

Decide how many authentication realms you require.
> At least one authentication realm is required, which you create during an initial installation by running Configuration Manager's Configure LDAP task. For an explanation of how to configure multiple realms, see the IBM FileNet P8 help topic **FileNet P8 Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **How to** → **Configure multiple realms**.

Make sure that you have a directory service provider in place.
Authentication in IBM FileNet P8 Platform is provided by the following supported directory servers:

- Microsoft Windows Active Directory

You can find detailed reference information in the IBM FileNet P8 help topic **FileNet P8 Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Directory Service Providers**.

IBM FileNet P8 supports only homogenous directory server environments. In other words, a single IBM FileNet P8 domain can be configured to use only one of the supported directory servers.

Understand the users and groups required for IBM FileNet P8.
All general administrative users and groups needing access to IBM FileNet P8-based applications must reside in one of the supported directory servers. This *Plan and Prepare Your Environment for IBM FileNet P8* provides instructions for creating the administrative accounts required for installation and initial configuration. For detailed reference information, see the IBM FileNet P8 help topic **FileNet P8 Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Users and groups**.

Process Engine delegates authentication to Content Engine.
Start with the IBM FileNet P8 Platform 4.0.0 release, Process Engine no longer has a direct connection to a directory server for authentication purposes, as it did in earlier releases. Instead, it delegates authentication tasks to Content Engine.

You can configure Content Engine to use email or UPN for login
You can assign the directory server's email attribute or, for Active Directory, the userPrincipalName (UPN) to be the user short name used for login. Instructions in the *IBM FileNet P8 Platform Installation and Upgrade Guide* provide a link to a procedure that explains how to do this.

(WebSphere only) Choose Stand-alone or Federated repository type.
There is an option in Configuration Manager's Configure LDAP task to select whether the WebSphere Application Server repository type is Stand-alone LDAP registry or Federated repositories. In order to have Configuration Manager use your repository type setting, you must select the Configuration Manager option to **Set as current active user registry**.

If you choose Stand-alone LDAP registry
Configuration Manager changes the administrative console user login to the new account you enter as the **Administrative console user name** (*ce_appserver_console_name*). This new account must reside in the Stand-alone LDAP registry location. The existing administrative console user login, if any, becomes invalid.

In order to have Configuration Manager replace an existing Stand-alone LDAP registry configuration, you must enable the Configuration Manager option **Overwrite existing repository**.

If you choose Federated repositories
By choosing the Federated repositories option in Configuration Manager, you are adding a new LDAP realm to an existing Federated LDAP repository. The administrative console user name (*ce_appserver_console_name*) you provide must be a unique user across all federated realms.

Avoid overlapping realm definitions

In the Configuration Manager task Configure LDAP, if you set the Websphere Application Server LDAP repository type option to **Federated repositories**, do not enter repositories with overlapping suffixes as they are not supported. For example, the following two repositories with overlapping Base entry distinguished names are not supported:

- dc=ibm,dc=com
- dc=filenet,dc=ibm,dc=com

This restriction especially applies to Active Directory parent and child domains, since by definition parent/child domains in AD have overlapping suffixes.

The repositories in the next example are supported, because they are sibling repositories and do not overlap:

- dc=tivoli,dc=ibm,dc=com
- dc=filenet,dc=ibm,dc=com

Administrative security must be enabled

Configuration Manager does not change the state of WebSphere administrative security. If it was on before running Configuration Manager, then it stays on; if it was off before, then it stays off. (Note, however, that Process Engine administrative security must be enabled before starting Content Engine. The *IBM FileNet P8 Platform Installation and Upgrade Guide* contains steps for enabling WebSphere's administrative security.)

For more information on federated LDAP repositories, consult the IBM WebSphere Application Server information center, and search for the keywords "federated repositories".

Configuring directory server

The Security administrator must perform certain configurations on the directory server that will provide the authentication repository for your IBM FileNet P8 system.

"Configuring Windows Active Directory"
You can configure Microsoft Windows Active Directory to be the directory service for IBM FileNet P8 Platform.

Configuring Windows Active Directory:

You can configure Microsoft Windows Active Directory to be the directory service for IBM FileNet P8 Platform.

For a complete list of IBM FileNet P8-supported Windows Active Directory features, refer to **System Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Directory service providers** → **Windows Active Directory**.

In a multi-domain Active Directory environment, a logon will fail for any account whose user name and password in a parent/child domain does not match those in a child/parent domain.

If you have an Active Directory failover configuration, you can configure IBM FileNet P8 to follow this failover sequence whenever Content Engine attempts to authorize an already authenticated user. You can do this during Content Engine installation while running the Create a Directory Configuration wizard, or at any

time after. See **System Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Directory service providers** → **Windows Active Directory** → **Active Directory failover**.

Server Side Sorting (SSS) must be enabled. This is because Process Engine and other IBM FileNet P8 components call on Content Engine to perform searches using a sorted paging mechanism. Without SSS, you will experience errors such as in Workplace when retrieving a document, when trying to open Process Designer via Workplace, or when starting a Connection Point on Application Engine. Note that SSS is normally enabled by default but is sometimes disabled due to concerns with performance.

DNS forwarders provide external DNS lookup functionality. If you are working in an "isolated" network, a DNS forwarder is not required. However, if you want to access the Internet or other network resources, then a DNS forwarder pointing to a DNS server that serves the external resources (for example, the Internet) is required.

To enable DNS forwarders:

1. On the machine that is configured as the Windows DNS Server, log on with an account that can configure the DNS components.
2. Start DNS. For example, on Windows 2003, choose **Start** → **All Programs** → **Administrative Tools** → **DNS** .
3. Right-click the *your_computer_name* container and select **Properties**.
4. Select the **Forwarders** tab and verify the check box for **Enable forwarders** is selected. If this feature is grayed out (unavailable), you must reconfigure your DNS server.
5. If you selected the check box, add an appropriate IP address and click **OK**. This IP address can be the IP address of a DNS server that allows traffic to the Internet.

Specifying IBM FileNet P8 accounts

Included in this topic you will find a set of tables that describe all the accounts you must specify to set up IBM FileNet P8 components.

This task assumes that you have completed the tasks required for your directory server in "Configuring directory server" on page 18.

Although these accounts are collected here under the Security administrator tasks because of their relationship to overall system security concerns, you will notice mention of other administrators who are likely to have the actual responsibility to create the accounts and put them to use.

The following procedures direct you to create or designate the accounts needed to install and configure IBM FileNet P8. For a complete list of the user and group roles, accounts, and responsibilities required to install, configure, and maintain an IBM FileNet P8 system, see the IBM FileNet P8 help topic **System Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Users and groups**.

Accounts are referred to in documentation in the following ways:

- By a display name; for example, *Database User Name*. An account's display name is how the IBM FileNet P8 user interface, such as an installation program or dialog box, refers to the account. Many accounts have both a display name and a variable.

- By a variable designator; for example *ce_db_user*, using lower-cased italics and underscores. The variable is intended to show that you must designate your own account to act in the role described by the variable. Accounts that do not appear in an interface or configuration file will have only a variable designator.

If you see a reference to an account that you do not understand, search the *Plan and Prepare Your Environment for IBM FileNet P8* guide and find the account table that defines it.

"Creating Process Engine directory server accounts"
Create new or designate existing directory server installation accounts for Process Engine, as shown in the following table.

Creating Process Engine directory server accounts:

Create new or designate existing directory server installation accounts for Process Engine, as shown in the following table.

This task should be performed by the Security Administrator. Process Engine can be installed by either a domain or local user. If you choose to install and optionally run Process Engine as a domain user, create the users identified here as optional. You must also create local users and groups for Process Engine installation and the domain users must be added to the local groups. See "Creating Process Engine operating system accounts" on page 9 for procedures for creation of local users and groups.

Create the following users and groups:

User or Group	Description
An optional domain user used to install Process Engine and to start and stop Process Engine software and services (Windows): *fnsw* While your security requirements may dictate that installation be done by a domain user, local users and groups are still required on the Process Engine machine.	This optional domain user can be used to install Process Engine software and to start and stop Process Engine software and services. Even if this domain user is created, you must create a corresponding local user on the Process Engine. Process Engine Windows services are configured by default to start with the *fnsw* local user and permissions on the software directory on the Process Engine are set for the local user and groups. Record this value in the Installation and Upgrade Worksheet.Assign the *fnsw* domain user to the following local groups on the Process Engine: • *fnusr* • *fnadmin* • *fnop* • Administrators Set the following rights to this user in the local security policy on the machine where Process Engine will be installed: • Act as part of the operating system • Adjust memory quotas for a process • Log on as a service (if this domain user will also run the Process Engine Windows services) • Replace a process level token If you choose to install Process Engine while logged on as this user, and run Process Engine SQL scripts from the installation program, ensure that this user has privileges in the database to run the scripts.
The password for the optional *fnsw* domain user (Windows): *fnsw_password*	This password is for the *fnsw* domain user. Record this value in the Installation and Upgrade Worksheet. Process Engine installation program on Windows prompts for the *fnsw_password*. On Windows the IMS ControlService and Process Engine Services Manager service are configured to start with the *fnsw* local user and the *fnsw_password* that is entered during Process Engine installation. Set this password to never expire. Process Engine activity ceases if the *fnsw_password* expires.

User or Group	Description
An optional domain user for Process Engine (Windows): *pe_install_user_domain*	This is a domain user account that can be used to install Process Engine software.
	Set the following rights to this user in the local security policy on the machine where Process Engine will be installed:
	• Act as part of the operating system
	• Adjust memory quotas for a process
	• Log on as a service (if this domain user will also run the Process Engine Windows services)
	• Replace a process level token
	You can log on as the *fnsw* user or create this user or the *pe_install_user_local* user (with the specified permissions) expressly for the purpose of running the Process Engine installation program. If you choose to install Process Engine while logged on as this user, and run Process Engine SQL scripts from the installation program, ensure that this user has privileges in the database to run the scripts.
Process Engine service user: *pe_service_user*	Process Engine uses the *pe_service_user* when connecting to the Content Engine server. This user must belong to the Process Engine Administrator group.
	Record this value in the Installation and Upgrade Worksheet. The name will be required input when configuring the Process Task Manager.
Process Engine administrators group: *pe_admin_group*	Members of this group automatically have administrative privileges for Process Engine.
	Record this value in the Installation and Upgrade Worksheet. The name will be required input when configuring the Process Task Manager.
Process Engine configuration group: *pe_config_group*	(Optional) A valid group name. Members of this group automatically have configuration privileges for the Process Engine workflow database.
	If this group is used to configure security on Process Task Manager, members of this group or of the Process Engine Administrator Group can make configuration changes to the workflow database. If the Process Engine Configuration group is not used during this configuration, anyone can make these changes.
	Record this value in the Installation and Upgrade Worksheet. The name will be input when configuring the Process Task Manager.

Database administrator installation tasks

The Database administrator must prepare the databases required for IBM FileNet P8, including gathering information about data sources, creating databases and database accounts, and installing client software.

* Review all rows assigned to the Database administrator (DBA) in the Installation and Upgrade Worksheet. While you complete the following preparation tasks, provide values for the rows that are appropriate to your installation. (Your organization might have different roles, and some of the responsibilities of listed roles will vary from those assigned by default in this documentation.)

  Tip: With the **Data → Filter → AutoFilter** command enabled, as it is by default in the shipping worksheet file (p8_worksheet.xls), perform the following actions to quickly see only the properties assigned to a particular Role:
  - Click the **AutoFilter** drop-down arrow in the **Role** column header and select **DBA**.
  - Further filter the result set by clicking the **AutoFilter** drop-down arrow in any of the other columns and selecting a value or clear a filter by selecting **(All)**.

  As an alternative, you can use the Customize Worksheet filtering macro, embedded in the worksheet file's Instructions tab.

* If you are installing in a non-English environment, review the considerations and procedures in Appendix A, "Preparing non-English environments for installing IBM FileNet P8 Platform," on page 41 before you begin your preparation tasks.

  "Creating Process Engine database accounts"
  You must create new or designate existing database accounts for Process Engine.

  "Preparing Oracle server" on page 24
  To prepare your Oracle databases, you must install the database software, and configure database components for IBM FileNet P8.

  "Configuring Oracle client for Process Engine" on page 35
  Install the Oracle Client software to prepare for the installation of Process Engine. Content Engine does not require installation of Oracle Client software.

  "Verifying the ability to connect to the database" on page 37
  Verify the ability to connect to the Process Engine database. These procedures can be run after initial configuration of the database and immediately prior to installation of Process Engine software. Run these steps on the database server or the client according to whether the database is local to or remote from Process Engine.

Creating Process Engine database accounts

You must create new or designate existing database accounts for Process Engine.

You create database users on Oracle and SQL Server databases for Process Engine by running SQL scripts. The scripts create default user names and passwords, or they can be edited to change the user names and passwords for your installation. Database permissions are also granted from the SQL scripts.

Create the following users and groups:

User or group name	Description
The database runtime user for Process Engine (Oracle): *f_sw*	The database runtime user for Process Engine. The user is defined when the `pe_filenet_site.sql` script runs.
	The default value is set to f_sw. The script can be edited to change the user name.
	Record the value for this user in the Installation and Upgrade Worksheet.
The password for the database runtime user for Process Engine (Oracle): *f_sw_password*	The database runtime user's password for Process Engine. The password is set when the `pe_filenet_site.sql` and `pe_install_scripts.sql` script runs.
	The default value is set to filenet. The script can be edited to change the password.
	Record the value for this user in the Installation and Upgrade Worksheet.
The database maintenance user for Process Engine (Oracle): *f_maint*	The database maintenance user for Process Engine. The user is defined when the `pe_filenet_site.sql` script runs.
	The default value is set to f_maint. The script can be edited to change the user name.
	Record the value for this user in the Installation and Upgrade Worksheet.
The password for the database maintenance user for Process Engine (Oracle): *f_maint_password*	The database maintenance user's password for Process Engine. The password is set when the `pe_filenet_site.sql` and `pe_install_scripts.sql` script runs.
	The default value is set to change$this_obnoxiou$_password. The script can be edited to change the password.
	Record the value for this user in the Installation and Upgrade Worksheet.

Preparing Oracle server

To prepare your Oracle databases, you must install the database software, and configure database components for IBM FileNet P8.

"Oracle planning considerations"
Plan the Oracle installation and configuration. Some rules apply to sharing of Oracle databases and tablespaces.

"Verifying that Oracle server is installed for IBM FileNet P8" on page 25
Install the Oracle software and configure the database components for your IBM FileNet P8 system.

"Running Process Engine pre-installation scripts (Oracle)" on page 31
You must run several SQL scripts to create Process Engine users, passwords, tablespace defaults and privileges for the users, stored procedures, and synonyms for the stored procedures. These scripts for Oracle databases can be run in one of three ways.

Oracle planning considerations:

Plan the Oracle installation and configuration. Some rules apply to sharing of Oracle databases and tablespaces.

General

- Determine whether you want to use a dedicated or shared database. In this regard:
  - Content Engine, Process Engine, and Rendition Engine can share a database engine, or they can each have a dedicated (unique) database engine.
  - Content Engine, Process Engine, and Rendition Engine can each have a dedicated Oracle database instance, or they can share a database instance with one another or with non-IBM FileNet P8 applications.
  - Content Engine, Process Engine, and Rendition Engine must each have their own tablespaces, even if they share a database engine.
  - Each Process Engine isolated region configured for region recovery must have dedicated tablespaces.

  For detailed information regarding installation of Rendition Engine, see the *IBM FileNet Rendition Engine Installation and Upgrade Guide*.
- Plan to use locally managed tablespaces. For performance reasons, IBM recommends that you create locally managed, rather than dictionary managed, tablespaces for Process Engine and Content Engine. (The tablespaces you create via Oracle Database assistant (dbca) are locally managed by default.)
- Be aware that Oracle security defaults have changed between releases. For example, in the Oracle llg release the default password expiration period is 180 days. Verify the policies are correct for your environment.
- Be aware of database client software requirements. For Process Engine, if the database is remote, you must install database client software on the Process Engine server.

Process Engine

- Process Engine does not support Oracle Password Complexity Verification during the installation process. During installation this Oracle feature must be turned off if the Process Engine run-time user (f_sw or alias) or maintenance user (f_maint or alias) will use default passwords. After installation is complete and the passwords are changed, Oracle's password complexity verification can be turned back on.
- Oracle SQL scripts must be run. A number of SQL scripts must be run that:
  - Create Oracle database accounts for IBM FileNet P8 Process Engine use.
  - Create a number of stored procedures.
  - Grant access levels to the default tablespaces specified in the Process Engine installation program.
- These scripts can be run manually, before starting Process Engine installation, or run from the Process Engine installation program. The Process Engine installation program will complete only if all these scripts run successfully.

Verifying that Oracle server is installed for IBM FileNet P8:

Install the Oracle software and configure the database components for your IBM FileNet P8 system.

You can install and configure an Oracle database that is dedicated or shared by one or more IBM FileNet P8 components. An Oracle database can be:
- dedicated to Content Engine

- dedicated to Process Engine
- dedicated to Rendition Engine
- shared by two or more of Content Engine, Process Engine, and Rendition Engine

In the shared configuration, the IBM FileNet P8 components use the same database, but different table spaces.

You can also share the database with other non-IBM FileNet P8 applications. In the dedicated configuration, Content Engine, Process Engine, and Rendition Engine use separate databases.

A database is local if it is on a machine where you will also be installing Content Engine, Process Engine, or Rendition Engine. A database is remote if it is on a separate server from the component using that database.

For information regarding installation of Oracle Server and Rendition Engine, see the *IBM FileNet Rendition Engine Installation and Upgrade Guide*.
- Make sure the machine that will host the database satisfies all pre-installation requirements specified in the Oracle installation documentation.
- For Content Engine and Process Engine, IBM FileNet P8 supports the Oracle Advanced Security functionality of secure data transfer across network protocol boundaries.
- If you will be installing Process Engine on a UNIX machine hosting the Oracle database, be sure that the value of the Oracle environment variable ORACLE_HOME (the path name for the Oracle Server software) is a string of at most 53 characters. If the string has more than 53 characters, the Process Engine installation program will not find the Oracle software, causing the installation to fail.
- Refer to the *IBM FileNet P8 Hardware and Software Requirements* guide for required operating system and database patch sets, and service packs. The Oracle patches are available at the Oracle Web site. The Oracle patch installation procedure might be less complicated if you do it before you create any databases.
- Transaction Processing is the required configuration type for the database that supports Content Engine. Choose this configuration type if your database will be dedicated to Content Engine or shared with Process Engine.
- Record the values for the following settings as you work through the database installation. Enter this information in the Process Engine installer or Content Engine installer sections of the Installation and Upgrade Worksheet, as appropriate. This information must be entered during subsequent installations. Be aware that the Process Engine installation program allows only alphanumeric characters and underscores.
  - Oracle Home
  - Global Database Name
  - Oracle temporary tablespace name
  - Oracle data tablespace name
  - Oracle index tablespace name (optional)
  - Oracle SID

  "Installing an Oracle database engine" on page 27
  Install the Oracle software and configure the database server.

"Configuring Oracle database character sets" on page 28
Determine the Oracle database character set to use for the Content Engine and Process Engine databases.

"Creating an Oracle database" on page 28
Create one or more databases, depending on whether one or more IBM FileNet P8IBM FileNet P8 components will share the database.

"Creating tablespaces for Process Engine" on page 28
Create Oracle tablespaces for Process Engine.

"Configuring automatic transaction recovery" on page 30
In a distributed database environment, Oracle MTS Recovery Service (automatically installed with Oracle Services for Microsoft Transaction Server) can resolve in-doubt transactions on the computer that started the failed transaction.

"Turning off Oracle password complexity verification" on page 30
Process Engine does not support Oracle Password Complexity Verification during the installation process if default passwords are used for the database runtime and maintenance users.

Installing an Oracle database engine:

Install the Oracle software and configure the database server.

The following procedure shows the minimal choices (specific to the needs of Content Engine and Process Engine) for installing a database engine. Consult Oracle installation documentation for complete preinstallation requirements and instructions. To install an Oracle database engine:

1. Choose the following from the list of available product components:
   - Oracle Server
   - Oracle Net Services
     – Oracle Net Listener
   - Oracle Development Kit
     – Oracle Call Interface (OCI)
   - (Windows) Oracle Windows Interfaces
     – Oracle Services for Microsoft Transaction Server
   - Oracle Documentation (recommended)

2. If a database is dedicated to Content Engine, or if it will be shared by Content Engine and Process Engine, then Transaction Processing (also known as OLTP) is the required configuration type.

3. If you are going to install Process Engine on this machine, verify/add/edit/uncomment the following lines in the file `sqlnet.ora` (create the file if it doesn't exist) while the Oracle services/processes are stopped:
   ```
   NAMES.DIRECTORY_PATH=(TNSNAMES)
   SQLNET.AUTHENTICATION_SERVICES=(NTS)
   ```

   If Oracle is configured to use LDAP, TNSNAMES must appear in the `names.directory_path` ahead of LDAP or ONAMES, for example: `NAMES.DIRECTORY_PATH=(TNSNAMES,ONAMES,LDAP).`

   `sqlnet.ora` is typically in `$ORACLE_HOME`/network/admin on UNIX or `ORACLE_HOME`\network\admin on Windows operating systems.

4. Refer to the *IBM FileNet P8 Hardware and Software Requirements* for required operating-system and database patch sets, and service packs.

5. Start the listener and the Oracle database service/processes (Windows/UNIX) if they have not started automatically.

Configuring Oracle database character sets:

Determine the Oracle database character set to use for the Content Engine and Process Engine databases.

- If a database is dedicated to Content Engine or shared with Process Engine, the required character set is AL32UTF8 (Unicode 3.1 UTF-8 universal character set).
- If an object store that is being upgraded uses a database with a character set other than AL32UTF8, you must convert that character set to AL32UTF8. When the character set is not AL32UTF8, applications that attempt to insert Unicode data, for example, when cutting and pasting from a word processing application into Workplace document properties, might (for some characters) experience data loss when stored in the database.
- If the database is dedicated to Process Engine, choose a UNICODE, multibyte, or single-byte 8-bit character set.

Be aware of the special NLS_LANG settings for character sets and locale on Process Engine machines. Consider the following requirements:

- You must ensure that the NLS_LANG Oracle environment variable on an Process Engine machine matches the character set/locale of the operating system.
- Under Windows, by default the Oracle Client installer sets the NLS_LANG value in the Windows registry to match the locale of the Oracle Client machine's operating system. For Process Engine, you do not need to override the registry value with the user environment variable. The Oracle client NLS_LANG value is adequate for either database character sets of Unicode (for example, AL32UTF8) or non-Unicode (for example, WE8MSWIN1252) database character set.
- Set the NLS_LANG value manually on Oracle Client machines using one of the following methods:
  - (Windows) Set or modify the value of the NLS_LANG key using System Properties in the Control Panel for each user who will be logging on to the machine to run IBM FileNet P8 software.

Creating an Oracle database:

Create one or more databases, depending on whether one or more IBM FileNet P8IBM FileNet P8 components will share the database.

IBM FileNet P8 requires the following settings for Oracle databases:

Database configuration type
  If a database is dedicated to Content Engine, or if it will be shared by Content Engine and Process Engine, then Transaction Processing (also known as OLTP) is the required configuration type.

Server process type
  Dedicated Server Mode

Database character set
  Choose a database character set, specified in "Configuring Oracle database character sets."

Creating tablespaces for Process Engine:

Create Oracle tablespaces for Process Engine.

To create tablespaces:

1. Create the tablespaces shown in the following table for the Process Engine. Note that the index tablespace (*vwindex_ts*) is optional. Tablespace names used by Process Engine can contain only alphanumeric and underscore characters. Names must start with an alphabetic character and must be at most 18 characters long.

2. If you will use the region recovery feature in Process Engine, you must create the default tablespaces and an additional data and index tablespace for each region to be configured for recovery. The same runtime and maintenance users will be used for all Process Engine tablespaces.

   The following table shows the recommended tablespace names, types, and minimum sizes:

Tablespace Name	Tablespace Type	Minimum Size (MB)	Description
vwdata_ts	Permanent	200	This is the default name of the data tablespace dedicated to Process Engine. This is the only data tablespace configured during Process Engine installation. Record the tablespace name in the Installation and Upgrade Worksheet.
vwtemp_ts	Temporary	400	This is the default name of the temporary tablespace dedicated to Process Engine. This is the only temp tablespace configured during Process Engine installation. Record the tablespace name in the Installation and Upgrade Worksheet.

Tablespace Name	Tablespace Type	Minimum Size (MB)	Description
vwindex_ts (optional)	Permanent	200	This is the default name of the optional default index tablespace. This is the only index tablespace configured during Process Engine installation. If you don't create an index tablespace the data tablespace will be used for indexes. Record the tablespace name in the Installation and Upgrade Worksheet.
region X data	Permanent	200	This is the data tablespace to be used by an individual region configured for recovery. This tablespace cannot be shared by any other region.
region X index	Permanent	200	This is the index tablespace to be used by an individual region configured for recovery. This tablespace cannot be shared by any other region.

Configuring automatic transaction recovery:

In a distributed database environment, Oracle MTS Recovery Service (automatically installed with Oracle Services for Microsoft Transaction Server) can resolve in-doubt transactions on the computer that started the failed transaction.

- Enable automatic transaction recovery by performing the tasks shown in the section "Scheduling Automatic Microsoft Transaction Server Recovery" in *Oracle Services for Microsoft Transaction Server Developer's Guide* (Oracle Part Number A95496-01).

- If you are using an Oracle Fail Safe configuration, perform the procedure shown in "Modifying Registry Values for Oracle Fail Safe Configurations" in *Oracle Services for Microsoft Transaction Server Developer's Guide* (Oracle Part Number A95496-01).

Turning off Oracle password complexity verification:

Process Engine does not support Oracle Password Complexity Verification during the installation process if default passwords are used for the database runtime and maintenance users.

If you are using the default passwords for the runtime (*f_sw*) or maintenance (*f_maint*) users, turn off this Oracle feature and do not re-enable it until you have installed and configured Process Engine.

Running Process Engine pre-installation scripts (Oracle):

You must run several SQL scripts to create Process Engine users, passwords, tablespace defaults and privileges for the users, stored procedures, and synonyms for the stored procedures. These scripts for Oracle databases can be run in one of three ways.

- Run them manually on the database server, before running the Process Engine installation program. If the scripts are run manually, both the default runtime and maintenance users and their passwords can be modified in the scripts before execution.
- Run them automatically from the Process Engine installation program, allowing the installation program to prompt for the sys password for Oracle.
- Run them automatically from the Process Engine installation program, running silently using operating system authentication. Use operating system authentication only in a trusted environment or when configured with a local database.

   "Scenarios for manually running SQL scripts for a Process Engine Oracle database"
   Several scenarios are used to describe Process Engine installation and configuration parameters and how to set them in each case.

   "Process Engine SQL scripts for Oracle" on page 32
   All Process Engine SQL scripts are located in the root of the Process Engine installation directory.

   "Changes made by `pe_filenet_site.sql` and `pe_ora_users_defaults.sql`" on page 33
   The information in columns 1, 2 and 3 is created or set by SQL script `pe_filenet_site.sql`. The information in column 5 is set by SQL script `pe_ora_users_defaults.sql`.

   "Changes made by `pe_create_stored_procedures.sql` and `pe_grant_sp_permissions.sql`" on page 34
   The information in columns 1, 2 and 3 is created by `pe_create_stored_procedures.sql`. The information in columns 4 and 5 is created by `pe_grant_sp_permissions.sql`.

   "Editing SQL scripts and changing default passwords (Oracle)" on page 35
   To change the default passwords in an Oracle database environment, you must edit the `pe_filenet_site.sql` and `pe_install_scripts.sql` script files.

   "Running SQL scripts manually for a new installation (Oracle)" on page 35
   To run SQL scripts for a new installation, copy the scripts to the database server, start SQL Plus, and enter `@pe_install_scripts.sql` *run_time_user maintenance_user data_tablespace index_tablespace temp_tablespace*.

Scenarios for manually running SQL scripts for a Process Engine Oracle database:

Several scenarios are used to describe Process Engine installation and configuration parameters and how to set them in each case.

Scenario 1: Run SQL scripts manually before installing using all default users and passwords

The DBA wants to run the required SQL scripts manually before running the Process Engine installation program. All default users and passwords are defined in the scripts.

1. Turn off Oracle password complexity.
2. Run the scripts manually, before running the Process Engine installation program, without making any changes in the scripts to passwords, setting the runtime user to f_sw and the maintenance user to f_maint.
3. Run Process Engine installation program and use default users for the database accounts (do not set aliases).
4. Leave the f_sw and f_maint password fields blank (using the defaults assigned with the scripts ran).
5. Turn Oracle password complexity back on.
6. Reset the f_sw and f_maint passwords by running Xdbconnect. This changes both the encrypted version of the password and the password in the database. Xdbconnect works only if the passwords in the encrypted file and the database match after installation.

Scenario 2: Run SQL scripts manually before installing with non-default users and passwords

The DBA wants to run the required SQL scripts manually before running the Process Engine installation program, but non-default users and passwords are set.

1. Do not turn off Oracle password complexity.
2. Edit the scripts to change the passwords.
3. Run the scripts, entering the desired runtime and maintenance users and passwords.
4. Run the Process Engine installation program and indicate that aliases will be configured. The user names set when the scripts ran must be defined as the aliases for f_sw and f_maint. None of the fields for alias names can be left blank in the Process Engine installation screen, but default values can be entered where default values are still wanted.
5. Set the f_sw and f_maint passwords during Process Engine installation to the match the passwords set when the scripts were run manually.
6. Do not reset passwords by running Xdbconnect. Because non-default passwords were used, there is no need to change them immediately after installation.

Process Engine SQL scripts for Oracle:

All Process Engine SQL scripts are located in the root of the Process Engine installation directory.

Script Name	Action
pe_install_scripts.sql	A wrapper script that runs the following scripts: pe_filenet_site.sql, pe_create_stored_procedures.sql, and pe_grant_sp_permissions.sql. The pe_install_scripts.sql script generates an Oracle output spool file. After the script completes, the Process Engine installation program scans the output file for errors.
pe_filenet_site.sql	Creates the database users for IBM FileNet P8. See "Changes made by pe_filenet_site.sql and pe_ora_users_defaults.sql" for details.
pe_create_stored_procedures.sql	Creates several stored procedures. See "Changes made by pe_create_stored_procedures.sql and pe_grant_sp_permissions.sql" on page 34 for details.
pe_grant_sp_permissions.sql	Runs grants and creates synonyms for stored procedures. See "Changes made by pe_create_stored_procedures.sql and pe_grant_sp_permissions.sql" on page 34 for details.
pe_ora_users_defaults.sql	Sets user tablespace defaults and privileges for IBM FileNet P8 users. See "Changes made by pe_filenet_site.sql and pe_ora_users_defaults.sql" for details.

The Process Engine scripts run with the following options:

run_time_user
> This option value is one of the following:
> - f_sw - if you use the default database users when you run the Process Engine installation program.
> - alias for f_sw - if you define aliases for the operating system and database users when you run the Process Engine installation program.

maintenance_user
> This option value is one of the following:
> - f_maint - if you use the default database users when you run the Process Engine installation program.
> - alias for f_maint - if you define aliases for the operating system and database users when you run the Process Engine installation program.

data _tablespace (Oracle only)
> The data tablespace name that will be entered during Process Engine installation.

index_tablespace (Oracle only)
> The index tablespace name that will be entered during Process Engine installation. This is an optional tablespace. If it does not exist, enter the data tablespace value.

temp_tablespace (Oracle only)
> The temp tablespace name that will be entered during Process Engine installation.

Changes made by pe_filenet_site.sql and pe_ora_users_defaults.sql:

The information in columns 1, 2 and 3 is created or set by SQL script `pe_filenet_site.sql`. The information in column 5 is set by SQL script `pe_ora_users_defaults.sql`.

FileNet DB user created	Granted permissions/ privileges/roles	Default Initial password	Can delete post-install?	Default, temp, and index Tablespace privileges***
f_sw or alias	Create session, alter session, create table, create view, create sequence, create public synonym, drop public synonym, create procedure	filenet	No	Data tablespace set
				Temp tablespace set
				Index tablespace set
	Select on sys.dba_users			Quota 0 on system
	Select on sys.dba_ tablespaces			Quota unlimited on default tablespace
	Create public synonym			Quota unlimited on temp tablespace
	Drop public synonym			Quota unlimited on index tablespace
f_maint or alias	DBA role	change$this_ obnoxiou$_ password	Yes	

Passwords can be manually changed after installation with the **Xdbconnect** tool.

*** Default data, temp, and index tablespace names are set during installation. These names are used to set database user privileges. The index tablespace is optional. If not specified, the data tablespace will be used.

Changes made by `pe_create_stored_procedures.sql` *and* `pe_grant_sp_permissions.sql:`

The information in columns 1, 2 and 3 is created by `pe_create_stored_procedures.sql`. The information in columns 4 and 5 is created by `pe_grant_sp_permissions.sql`.

Procedure name	Owner	Description	Grants	Synonym
fn_error	f_sw or alias	Displays text of a specified ORA error number. Calls SQL stored procedure fn_errortxt to get the text.	Execute to public	fn_ error

Procedure name	Owner	Description	Grants	Synonym
fn_ oraversion	f_sw or alias	Displays version number of Oracle RDBMS. Calls SQL stored procedure fn_oraversiontxt.	Execute to public	fn_ oraversion
fn_errortxt	f_sw or alias	Gets and returns the message text of a specified ORA SQL Error Code.	Execute to public	fn_ errortxt
fn_ oraversiontxt	f_sw or alias	Gets and returns the version number of the Oracle RDBMS.	Execute to public	fn_ oraversiontxt

Editing SQL scripts and changing default passwords (Oracle):

To change the default passwords in an Oracle database environment, you must edit the pe_filenet_site.sql and pe_install_scripts.sql script files.

1. Open the pe_filenet_site.sql script with a text editor.
2. Locate and edit the default runtime password (filenet) in the following command:

   ```
   grant create session, alter session, create table,
   create view, create sequence, create public synonym, drop public
   synonym, create procedure to &1 identified by filenet;
   ```

3. Locate and edit the default maintenance password (change$this_obnoxiou$_passwrd) in the following command:

   ```
   grant dba to &2 identified by change$this_obnoxiou$_passwrd;
   ```

4. Open the pe_install_scripts.sql script with a text editor.
5. Locate and edit the default runtime password (filenet) in the following command:

   ```
   connect &1/filenet
   ```

Running SQL scripts manually for a new installation (Oracle):

To run SQL scripts for a new installation, copy the scripts to the database server, start SQL Plus, and enter @pe_install_scripts.sql *run_time_user maintenance_user data_tablespace index_tablespace temp_tablespace.*

1. From the Process Engine software package, copy the scripts to the database server.
2. Start SQL Plus. For example, enter the command: sqlplus "sys/*password* as sysdba"
3. At the SQL prompt, enter: @pe_install_scripts.sql *run_time_user maintenance_user data_tablespace index_tablespace temp_tablespace* For example:

   ```
   @pe_install_scripts.sql f_sw
   f_maint vwdata_ts vwindex_ts vwtemp_ts
   ```

Configuring Oracle client for Process Engine

Install the Oracle Client software to prepare for the installation of Process Engine. Content Engine does not require installation of Oracle Client software.

For information regarding installation of Oracle Client and Rendition Engine, see the *IBM FileNet Rendition Engine Installation and Upgrade Guide.*

- Install Oracle Client on any machine that will host Process Engine, Rendition Engine, or any other IBM FileNet P8 component except Content Engine (such as Enterprise Manager) that needs to access an Oracle database.
- Install a 32-bit Oracle Client for Process Engine.
- If you will be installing Process Engine on a UNIX machine hosting Oracle Client software, be sure that the value of the Oracle environment variable ORACLE_HOME (the path name for the Oracle Client software) is a string of at most 53 characters. If the string has more than 53 characters, the Process Engine installer will not find the Oracle software, causing the installation to fail.
- Refer to the *IBM FileNet P8 Hardware and Software Requirements* for required operating system and database patch sets, and Service Packs. The Oracle patches are available at the Oracle website. The Oracle patch installation procedure might be less complicated if you do it before you create any databases.

  "Installing the Oracle client"
  You have minimal choices (specific to the needs of Process Engine) for installing a database client. Consult the Oracle installation documentation for complete preinstallation requirements and instructions.

Installing the Oracle client:

You have minimal choices (specific to the needs of Process Engine) for installing a database client. Consult the Oracle installation documentation for complete preinstallation requirements and instructions.

To install the Oracle client:
1. Choose the following from the list of available product components:
   - Oracle10g Client or Oracle11g Client as appropriate
   - Oracle Network Utilities
   - Oracle Database Utilities
   - SQL*PLUS
   - (Windows) Oracle Windows Interfaces
     – Oracle Services for Microsoft Transaction Server
2. Using Oracle Net Configuration Assistant, test the connection to the Oracle database server with an appropriate Oracle user and password.
3. If you are going to install Process Engine software on this machine, and your remote Oracle database uses the Unicode character set AL32UTF8, then for each user who will access Process Engine software on the machine, set the value of the Oracle environment variable parameter NLS_LANG to reflect the PE-supported locale and (non-Unicode) character set on the machine.

Option	Description
Windows	Set/modify the value of the NLS_LANG key via System Properties in the Control Panel.

   To affect the environment for only Process Engine, set NLS_LANG for just the fnsw user. (On Windows platforms, fnsw is created by the Process Engine installer; on UNIX platforms, you manually create fnsw as part of the Process Engine installation task.)
4. If you are going to install Process Engine software on this machine to connect to a remote Oracle database, set the value of an environment variable for the oracle user to a default connect identifier, such as the Oracle net service name or the database service name. The name of the environment variable depends on which operating system is on this machine:

Option	Description
Windows	LOCAL

5. If you are going to install Process Engine on this machine, verify that the `sqlnet.ora` file exists and that the following lines are in it.

   ```
   NAMES.DIRECTORY_PATH=(TNSNAMES)
   SQLNET.AUTHENTICATION_SERVICES=(NTS)
   ```

   If Oracle is configured to use LDAP, TNSNAMES must appear in the `names.directory_path` ahead of LDAP or ONAMES, for example:

   ```
   NAMES.DIRECTORY_PATH=(TNSNAMES,ONAMES,LDAP)
   ```

   `sqlnet.ora` is typically in *$ORACLE_HOME*/network/admin on UNIX or *ORACLE_HOME*\network\admin on Windows operating systems.

6. Install all required Oracle patches, as specified in the *IBM FileNet P8 Hardware and Software Requirements*. These patches are available at the Oracle Web site.

Verifying the ability to connect to the database

Verify the ability to connect to the Process Engine database. These procedures can be run after initial configuration of the database and immediately prior to installation of Process Engine software. Run these steps on the database server or the client according to whether the database is local to or remote from Process Engine.

"Verifying the Process Engine database connection (Oracle)"
Verify that the Oracle database instance used by Process Engine is accessible. How you log on to sqlplus will vary, depending upon how you will choose to run the SQL scripts.

Verifying the Process Engine database connection (Oracle):

Verify that the Oracle database instance used by Process Engine is accessible. How you log on to sqlplus will vary, depending upon how you will choose to run the SQL scripts.

This procedure will verify that you can connect to the Oracle database in the same way the Process Engine installation program will. Make whatever corrections are necessary before proceeding.

To verify the Process Engine database connection:
1. Run the following at a command prompt on the Process Engine:

   ```
   su - oracle -c "sqlplus"
   ```

2. Enter one of the following commands at the SQLPlus prompt, as follows:
   - If the Process Engine pre-installation SQL scripts will be run from the Process Engine installation program by prompting for the sys password, type the following command:

     ```
     sys/password as sysdba
     ```

   - If the SQL scripts will be run from the Process Engine installation program by using operating system authentication, type the following command:

     ```
     / as sysdba
     ```

3. At the prompt, enter the following SQL command:

   ```
   SQL> select instance_name, host_name, version
   from v$instance;
   ```

   The following represents an example of the information returned:

```
INSTANCE_NAME

----------------

HOST_NAME

---------------------------------------------------------------

VERSION

----------------
```

p8dbshr HQVWBUCS 10.2.0.2.0

where:

- *p8dbshr* is the instance ORACLE_SID.
- *HQVWBUCS* is the database server name.
- *10.2.0.2.0* is the Oracle server version.

Application Server administrator installation tasks

The Application Server Administrator must prepare the application servers for IBM FileNet P8 Platform, including planning deployment, creating administrative accounts, and configuring JDBC drivers for both Content Engine and Application Engine.

- Review all rows assigned to the Application Server Administrator (ASA) in the Installation and Upgrade Worksheet. While you complete the following preparation tasks, provide values for the rows that are appropriate to your installation.

  Tip: With the **Data** → **Filter** → **AutoFilter** command enabled, as it is by default in the shipping worksheet file (p8_worksheet.xls), perform the following actions to quickly see only the properties assigned to a particular Role:

  – Click the **AutoFilter** drop-down arrow in the **Role** column header and select ASA.
  – Further filter the result set by clicking the **AutoFilter** drop-down arrow in any of the other columns and selecting a value or clear a filter by selecting (All).

- If you are installing in a non-English environment, review the considerations and procedures in Appendix A, "Preparing non-English environments for installing IBM FileNet P8 Platform," on page 41 before you begin your preparation tasks.

- Review the following planning considerations:

  – "Application server planning considerations" on page 3

  "Configuring Process Engine clients for ORB"
  Process Engine clients require either the IBM or the Sun Object Request Broker (ORB).

  "Configuring the documentation server" on page 39
  If you want to have a local documentation installation instead of linking to the information center at www.ibm.com, plan to install IBM FileNet P8 documentation on an application server. Deploying the help as a Web application ensures that you can access online help from within IBM FileNet P8 applications and use the full-text search feature.

Configuring Process Engine clients for ORB

Process Engine clients require either the IBM or the Sun Object Request Broker (ORB).

This applies to the following configurations:

- J2EE application server clients such as Workplace or Workplace XT

- Content Engine when using the workflow subscription processor to launch workflows
- Non-J2EE and custom applications

The default ORB varies by application server, so in most instances no changes are required. However, in certain configurations you must override the defaults as follows:

Application server	Changes
IBM WebSphere Application Server with the IBM JVM	No changes are required.

Configuring the documentation server

If you want to have a local documentation installation instead of linking to the information center at www.ibm.com, plan to install IBM FileNet P8 documentation on an application server. Deploying the help as a Web application ensures that you can access online help from within IBM FileNet P8 applications and use the full-text search feature.

Ensure that you have a supported application server. The application server can be one of the servers that you already prepared for Content Engine or Application Engine.

After you have chosen the application server for the documentation, you can specify the value for the documentation URL. This is useful when recording the installation properties for the other IBM FileNet P8 components.

To determine the documentation URL:

1. Choose the application server for the IBM FileNet P8 documentation.
2. Make a note of the server URL. The format of the URL depends on the documentation package you choose:

Table 1. Documentation URLs

FileNet P8 Documentation package	URL
Installed Eclipse-based information center	http://*yourdocserver*:*port#*/p8docs/index.jsp
Installed non-Eclipse-based documentation package	http://*yourdocserver*:*port#*/ecm_help/_start_here.htm

3. Search the Installation and Upgrade Worksheet for documentation server properties in the **Property** or **Parameter** column.
4. Enter the URL value into the worksheet for each instance of that property for the components you are going to install.

Appendix A. Preparing non-English environments for installing IBM FileNet P8 Platform

To run IBM FileNet P8 components in a non-English environment, certain conditions must be met. Review the following considerations and tasks, organized by administrator role, if you plan to run IBM FileNet P8 in a non-English environment.

"Application Server administrator"
To support Unicode UTF-8 characters, all FileNet P8 domain application servers must be properly configured and must have all fix packs installed.

"Security administrator"
The IBM FileNet P8 security administrator installation role includes configuring and maintaining directory servers.

"Database administrator" on page 42
The IBM FileNet P8 database administrator installation role includes configuring database installations and tablespaces, and creating database accounts.

"IT administrator" on page 45
Depending on the operating system, the IT administrator installs either a localized version of the operating system, or the operating system language pack.

"IBM FileNet P8 administrator" on page 46
The FileNet P8 administrator starts Process Engine services and configures Process Task Manager for Application Engine and Workplace XT.

"Limitations on installing in a non-English environment" on page 46
There are certain limitations on installing IBM FileNet P8 in non-English environments.

Application Server administrator

To support Unicode UTF-8 characters, all FileNet P8 domain application servers must be properly configured and must have all fix packs installed.

"Configuring character encoding on WebSphere Application Server"
IBM FileNet P8 requires the following character encoding settings.

Configuring character encoding on WebSphere Application Server

IBM FileNet P8 requires the following character encoding settings.

1. Set the com.ibm.CORBA.ORBCharEncoding property to 0x05010001.
2. Set the com.ibm.websphere.security.BasicAuthEncoding property to UTF-8.

Security administrator

The IBM FileNet P8 security administrator installation role includes configuring and maintaining directory servers.

"Extended characters and user names" on page 42
Note the following considerations for localized IBM FileNet P8 accounts.

Extended characters and user names

Note the following considerations for localized IBM FileNet P8 accounts.

- With Microsoft Active Directory, Process Engine supports:
  - Extended characters in user names and passwords for all Latin1, Latin2, and Arabic languages
  - Extended characters in passwords for double-byte languages (Users names are not supported due to Microsoft limitations.)
- Process Engine does not support extended characters in LDAP attributes for authentication purposes. These attributes include, but are not limited to, such items as cn (common name), ou (organizational unit), or dc (domain component). ASCII characters are required for these attributes.
- Process Engine does not support non-ASCII user names. Therefore, do not use non-ASCII user names when starting the Process Task Manager.
- WebDAV and the SSO environment also do not support Non-ASCII user names.
- Support for a Windows non-ACSII user name is limited to the Process Engine database code page. For example, if the Process Engine database code page is Japanese, Process Engine can support only Japanese and English user names. If the Process Engine database code page is Latin1, Process Engine can support all Latin1 user names, such as English, French, German, Spanish, and so forth.

Database administrator

The IBM FileNet P8 database administrator installation role includes configuring database installations and tablespaces, and creating database accounts.

"Installing Oracle server"
Before installing Oracle, verify that the operating system locale is set appropriately.

Installing Oracle server

Before installing Oracle, verify that the operating system locale is set appropriately.

"Installing Oracle client"
Consider the following language information when installing Oracle Client software.

"UNIX" on page 44
For all Process Engine deployments using a remote Oracle database, confirm the following two environment variables in the fnsw user profile are set to the proper locale for Process Engine.

Installing Oracle client

Consider the following language information when installing Oracle Client software.

"NLS_LANG environment variable - charset"
When data is exported from an Oracle database, it is converted from the database character set to the character set specified in the NLS_LANG environment variable on the Oracle client.

"Setting the NLS_LANG variable on Windows" on page 43
To set the NLS_LANG variable, open the Registry Editor and update **HKEY_LOCAL_MACHINE** → **SOFTWARE** → **ORACLE_HOME** → **NLS_LANG= language_territory.charset**.

NLS_LANG environment variable - charset:

When data is exported from an Oracle database, it is converted from the database character set to the character set specified in the NLS_LANG environment variable on the Oracle client.

When data is imported to an Oracle database, it is assumed imported data is already in the character set specified in the NLS_LANG environment variable.

If the database character set matches the operating system locale, you do not need to set the NLS_LANG environment variable. However, if the database character set does not match the operating system locale and the NLS_LANG environment variable is not set, data could become garbled because the database will incorrectly map the import/export data between the database and operating system.

Requirement: The NLS_LANG environment variable setting must match the UNIX locale or the Windows code page of the Process Engine server if the Oracle database is remote.

The format of the NLS_LANG environment variable is:

```
NLS_LANG = language_territory.charset
```

The following table provides a brief explanation about the environment variable arguments. For more information, see the Oracle documentation.

Arguments	Description
Language	Specifies the language used for Oracle messages, day names, and month names. Each supported language has a unique name, for example, American, French, or Japanese. The language argument has default values for the territory and character set arguments, so either (or both) of the territory or the character set arguments can be omitted. If a language is not specified, the value defaults to American.
Territory	Specifies the default date format and decimal character used for numbers. Each supported territory has a unique name, for example, America, France and Japan. Because each language provides a default territory, a value is not required.
Charset	Specifies the character set used by the client application (normally that of the user's terminal). Each supported character set has a unique acronym, for example, US7ASCII, WE8ISO8859P1, or JA16EUC. Because each language provides a default character set, a value is not required.

Setting the NLS_LANG variable on Windows:

To set the NLS_LANG variable, open the Registry Editor and update **HKEY_LOCAL_MACHINE → SOFTWARE → ORACLE_HOME → NLS_LANG= language_territory.charset**.
1. Determine the Oracle database character set that best matches the Process Engine Windows server code page.
2. Open the Registry Editor by typing `regedit` at the command prompt.
3. Navigate to and update **HKEY_LOCAL_MACHINE → SOFTWARE → ORACLE_HOME → NLS_LANG= language_territory.charset**.

4. Verify the character set matches the Process Engine Windows operating system code page.

5. Click **OK** to close the window and exit the Registry Editor.

For more information, see http://www.microsoft.com/globaldev/reference/ WinCP.mspx.

UNIX

For all Process Engine deployments using a remote Oracle database, confirm the following two environment variables in the fnsw user profile are set to the proper locale for Process Engine.

The LANG environment variable specifies internationalization information that allows users to work with different national conventions in UNIX. For more information, see the UNIX documentation.

"Setting the NLS_LANG environment variables"
The task of setting the NLS_LANG environment variables consists of configuring the language, territory and character set that correspond to the locale of your Process Engine server.

Setting the NLS_LANG environment variables:

The task of setting the NLS_LANG environment variables consists of configuring the language, territory and character set that correspond to the locale of your Process Engine server.

Modify the fnsw `user.profile` file in `/home/fnsw`:

`export NLS_LANG=language_territory.charset`

where: `language_territory.charset` is the language, territory, and charset that best match your Process Engine server locale.

Example of Process Engine LANG, Oracle character sets, and NLS_LANG configurations:

The following table includes some sample NLS_LANG settings for different Process Engine configurations. Most important is to match your NLS_LANG to a Process Engine locale, not the Oracle database character set. For multilingual Process Engine configurations, the database character set must be AL32UTF8, and the server must use an UTF-8 locale. For example, LANG=JA_JP.UTF-8, or NLS_LANG=Japanese_Japan.UTF8 or NLS_LANG=French_France.UTF8@euro.

OS	Locale/Windows Code Page	Remote Oracle Character Set	NLS_LANG for PE Server fnsw User	Comments
Windows	Japanese (Shift-JIS)	JA16SJIS	NLS_LANG= Japanese_Japan. J A16SJIS	Because Shift-JIS is the code page for Windows, The Oracle JA16SJIS character set is the best match.

OS	Locale/Windows Code Page	Remote Oracle Character Set	NLS_LANG for PE Server fnsw User	Comments
Windows	Japanese (Shift-JIS)	JA16EUC	NLS_LANG= Japanese_Japan. JA16SJIS	Although the database character set is JA16EUC, the Oracle character set in NLS_LANG is JA16SJIS since Shift-JIS is the code page for Windows.

IT administrator

Depending on the operating system, the IT administrator installs either a localized version of the operating system, or the operating system language pack.

"Operating system considerations"
In addition to any operating system platforms, the IT administrator must consider the FileNet P8 Platform components that will be installed in a non-English environment.

"Microsoft Windows" on page 46
Use the localized Windows version when available. If the localized version is not available, use the English version with the appropriate regional setting.

Operating system considerations

In addition to any operating system platforms, the IT administrator must consider the FileNet P8 Platform components that will be installed in a non-English environment.

Process Engine

Process Engine must be installed on:
- A UTF-8 locale and a UTF-8 database character set when used with Oracle or DB2
- On any localized version of Windows for the supported language or in any region on the English version of Windows

Process Engine has limited language support on Windows. Process Engine supports only those languages that are supported by the Windows code page and a corresponding database character set. For example, if the active Windows code page and the corresponding database character set support Latin 1 languages, Process Engine will support such languages as English, French, Spanish, and Italian (and other Latin 1 languages) because these languages share a common character code page. However, Japanese cannot be supported in this scenario because the Japanese language uses a different character code page. Conversely, if the active Windows code page and the corresponding database character set support Japanese (and English) will be the only languages supported by Process Engine.
- All Windows character code pages support English in addition to their primary languages.

- The Java Runtime Environment version must be 1.5.0 or higher for the language capability to function correctly.

Microsoft Windows

Use the localized Windows version when available. If the localized version is not available, use the English version with the appropriate regional setting.

Use the Regional Options Control Panel to change the regional setting. For more information, see the Windows help system.

IBM FileNet P8 administrator

The FileNet P8 administrator starts Process Engine services and configures Process Task Manager for Application Engine and Workplace XT.

Limitations on installing in a non-English environment

There are certain limitations on installing IBM FileNet P8 in non-English environments.

GB18030 support for Windows Process Engine

Process Engine installed on Windows does not support GB18030 Simplified Chinese characters.

Publishing

When the watermark is checked in the Publishing Style Template Manager on the Content Engine server, double-byte documents cannot be published. This is a known independent software vendor issue.

Process Engine Modeler

To import a user defined XSD file containing non-English characters in Process Designer, run the following command to convert characters to the Unicode encoding format to match a UNIX Process Engine in a UTF-8 locale, then import the XSD file into Process Designer.

```
Java -cp pe.jar filenet.vw.toolkit.utils.FileConverter /in filename /out outfilename
```

Appendix B. IBM FileNet P8 ports

The tables below list the port numbers used by IBM FileNet P8 components.

Process Engine ports

Port name	Default number	Notes
SMTP (E-mail Notification)	25	This port is on the SMTP server.
Oracle	1521	This port is on the database server, for connection between Process Engine and Oracle.
Oracle Services for Microsoft Transaction Server (Windows)	2030	This port is on the Oracle (Windows) database server.
TMS	32768 (TCP)	Task Manager service. TM_daemon listens for requests from initfnsw running on the same or a different system analogous to COR_Listen listening for RPCs.
COR	32769 (TCP)	Courier service. COR_Listen listens on this port for incoming RPC requests.
NCH	32770 (UDP)	nch is the NCH deamon. NCH_daemon listens on this port. Pre-4.1.2 listened for broadcasts, etc. Post 4.1.2, only listens for old print servers to verify NCH is up.
fn_snmpd	161 (UDP)	IBM FileNet Image Services Simple Network Management Protocol Daemon. It listens for SNMP requests from the native OS snmp daemon. The native snmp daemon listens on this port and communicates with fn_snmpd through other local port. fn_snmpd does not listen on this port.
fn_trapd	35225 (UDP)	fn_trapd is the IBM FileNet Image Services trap daemon, which listens for notifications of the end of Image Services background processes running on the server and sys_logs information.
Rules Listener	32774 (TCP/IP)	This port is on the Process Engine server.

Port name	Default number	Notes
Process Engine Communication Port (IOR port)	32776	This port is on the Process Engine server.
BPM Web Services Reliable messaging client port	32767 (TCP) 32767 (UDP)	This port is on the Process Engine server.
Registry Port	32771	This port is on the Process Engine server and is used by the Component Manager.
Event Port	32773	This port is on the Process Engine server.
Process Engine Broker Port	32777	This port is on the Process Engine server, and is for the vworbbroker process handling RPCs from the PE API clients.

Application Engine ports

Port name	Default number	Notes
WebSphere	9080	This port is on the WebSphere Application Server for clients to connect to Application Engine.
WebSphere SSL	443	This port is on the WebSphere Application Server for clients to connect to Application Engine through SSL.
Process Engine (RMI)	32771	This port is on the Windows Process Engine server for Process Task Manager to communicate with the Windows Process Engine Services Manager. This port is on the Application Engine server for Process Task Manager to communicate with the Component Managers and the Windows Process Application Engine (or Workplace XT) Services Manager.
Component Manager (Event Port)	32773	This port is on the Application Engine server, and is used when the Component Manager (running on the Application Engine Server) is configured to be triggered by events, instead of polling.

Port name	Default number	Notes
Web Services Reliable Messaging Client Port	xxxx - assigned by the client on the Application Engine Server, for a particular Component Manager instance.	This port (or a number of ports, one per Component Manager instance) is on the Application Engine server to respond to the WS-Reliable Messaging requests.

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Index

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