

IBM FileNet P8  
Version 4.5.1

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





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**Note**

Before using this information and the product it supports, read the information in "Notices" on page 79.

This edition applies to version 4.5.1 of IBM FileNet Content Manager (product number 5724-R81), version 4.5.1 of IBM FileNet Business Process Manager (product number 5724-R76), and to all subsequent releases and modifications until otherwise indicated in new editions.

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## ibm.com and related resources

Product support and documentation are available from [ibm.com](http://www.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	<a href="http://www.ibm.com/support/docview.wss?rs=3278&amp;uid=swg27010422">http://www.ibm.com/support/docview.wss?rs=3278&amp;uid=swg27010422</a>

#### "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).

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## How to send your comments

Your feedback is important in helping to provide the most accurate and highest quality information.

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](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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## Contacting IBM

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

To learn about available service options, call one of the following numbers:

- In the United States: 1-888-426-4343
- In Canada: 1-800-465-9600

For more information about how to contact IBM, see the Contact IBM Web site at <http://www.ibm.com/contact/us/>.



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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 9*

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 5*

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 7*

The Installation and Upgrade Worksheet is a Microsoft<sup>®</sup> 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.

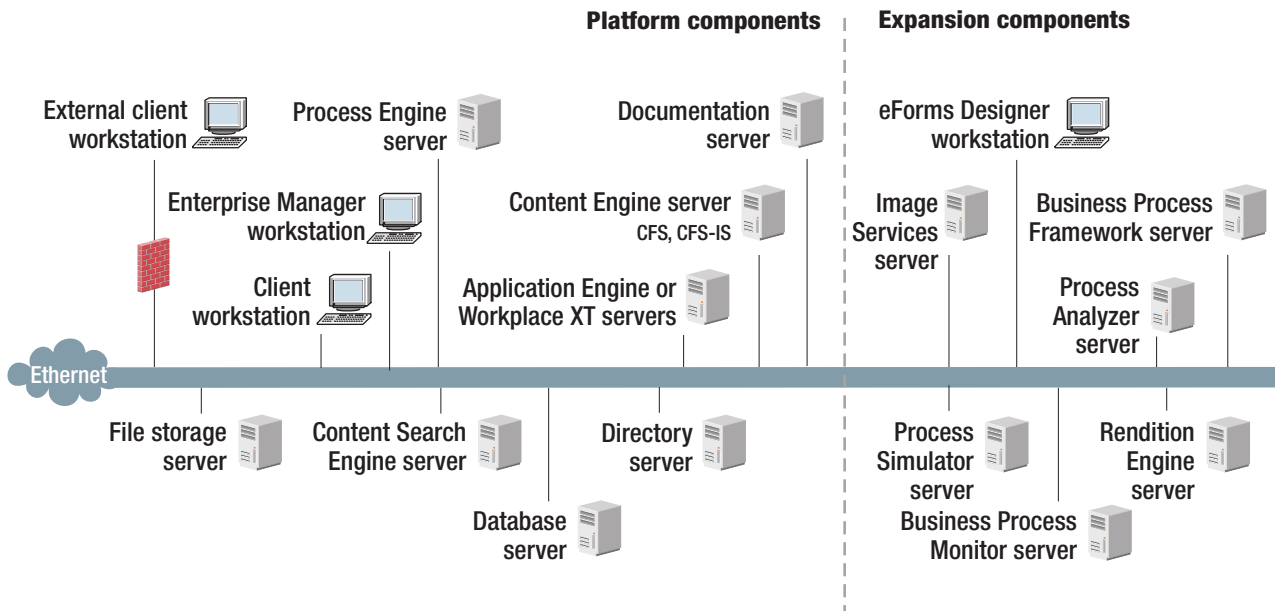


Figure 1. Baseline configuration with expansion components

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.

“Planning Content Engine deployment”

You can deploy Content Engine in either a stand-alone, multi-instance single-server, or cluster environment.

“Application server planning considerations” on page 4

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.

### **Planning Content Engine deployment**

You can deploy Content Engine in either a stand-alone, multi-instance single-server, or cluster environment.

#### **Standalone deployment**

When you deploy Content Engine as a stand-alone application, you configure a single application server. You must configure your Content Engine instances and deploy those Content Engine instances on a single server, using a single directory for the configuration files.

#### **Multi-instance single-server deployment**

When you deploy multiple Content Engine instances on a single server, you configure a single application server.

Each Content Engine instance is isolated from the others, and there is no exchange of information between the instances. For example, you can dedicate a Content Engine instance for use by the Research and Development department, and you can dedicate a Content Engine instance for use by the Human Resources department. Each instance has its own set of object stores.

You must perform all the procedures for each instance on a single server, using a different directory for the configuration files for each instance. It is a best practice to deploy only a single instance into a cluster.

## Managed deployment

When you deploy Content Engine in a WebSphere® Application Server managed environment, you must install and configure Content Engine on the network deployment node to avoid cross-network configuration issues. Install and configure Content Engine on the administration server. Then use the administration server tools to deploy the Content Engine EAR file to the managed servers.

## Non-managed deployment

When you deploy Content Engine in a WebSphere Application Server non-managed environment, you install and configure Content Engine on a single server in the environment. After you deploy the bootstrapped Content Engine EAR file on the initial server, you copy the bootstrapped EAR file to the other servers and complete the configuration tasks for each server. Finally, you deploy the bootstrapped EAR file that was copied from the initial server.

## Cluster deployment

Cluster deployments can be used for load balancing or to provide high availability. Refer to the *IBM FileNet P8 High Availability Technical Notice* for details on how to set up your FileNet P8 system using clusters, farms, and other high availability software and hardware.

## 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.

“WebSphere Application Server and WebLogic Server - Content Engine multi-server deployment”

In an environment of load-balanced or highly-available farmed (or clustered) application servers, you will initially install Content Engine on the Deployment Manager node (IBM WebSphere Application Server) or the Administrator node (WebLogic Server).

### **WebSphere Application Server and WebLogic Server - Content Engine multi-server deployment:**

In an environment of load-balanced or highly-available farmed (or clustered) application servers, you will initially install Content Engine on the Deployment Manager node (IBM WebSphere Application Server) or the Administrator node (WebLogic Server).

To install Content Engine in centrally managed servers in farms or clusters, see the *IBM FileNet P8 High Availability Technical Notice*.

**Important:** The base version of WebSphere Application Server that is bundled with Content Engine does not include cluster support. To configure clusters, you must have Content Engine installed on servers that are running the IBM WebSphere Application Server Network Deployment version.

Note the impact of deploying centrally managed servers not in farms or clusters. In an environment in which multiple Content Engine instances are geographically dispersed, and where each instance might have its own local Application Engine or Workplace XT server, you will install Content Engine on the Deployment Manager node (WebSphere Application Server) or the Administrator node (WebLogic Server). After installing Content Engine, you will use Configuration Manager to deploy it to other servers.

## **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 10

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 25

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 55

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 37

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”

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 7 topic for details.

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

"IT administrator installation tasks" on page 10

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 25

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 37

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 55

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 7. 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 Content Engine operating system accounts”

The IT Administrator must create several operating system accounts required by FileNet P8 components during installation.

“Creating Process Engine operating system accounts” on page 13

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

“Configuring Microsoft Windows” on page 16

You must perform certain operating system procedures on all Windows-based servers where you will install FileNet 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 20

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

“Preparing storage areas for object stores” on page 21

To prepare for file storage, you must prepare the locations where file stores will go, configure remote access protocol, and, if you plan to implement content-based retrieval, perform security configurations.

### Creating Content Engine operating system accounts

The IT Administrator must create several operating system accounts required by FileNet P8 components during installation.

Create the following users and groups:

User or group name	Description
Application Server Installation Administrator: (WebSphere Application Server, WebLogic Server, JBoss Application Server): <i>ce_appserver_install_user</i>	<p>An operating system user account you used to install your application server.</p> <p>Use your local machine's administrative tools to grant <i>ce_appserver_install_user</i> at least the following permissions:</p> <ul style="list-style-type: none"> <li>• For Windows, <i>ce_appserver_install_user</i> must be a member of the local administrators group.</li> </ul> <p>Later in the installation process, the <i>ce_appserver_install_user</i> performs the following tasks:</p> <ul style="list-style-type: none"> <li>• Create and configure the application server/domain/profile for Content Engine.</li> <li>• Start or stop the application server when needed.</li> <li>• Modify the application server files or directories as needed for deploying the Content Engine application using the Configuration Manager tool.</li> <li>• Provide create, read and write permissions for directories on devices or drives that are used for external Content Engine file storage.</li> </ul> <p><i>ce_appserver_install_user</i> must be a member of the <i>ce_appserver_install_group</i>.</p>
Application Server Installation Group: <i>ce_appserver_install_group</i>	<p>Create an operating system group account and add to it the following accounts:</p> <ul style="list-style-type: none"> <li>• <i>ce_appserver_install_user</i></li> <li>• <i>ce_install_user</i> (Windows) or <i>ce_install_user</i> (UNIX).</li> <li>• <i>config_mgr_user</i></li> </ul> <p>Use the user accounts in <i>ce_appserver_install_group</i> to do the following tasks:</p> <ul style="list-style-type: none"> <li>• Give operating system privileges to the directories used for the Content Engine Installation and for the application server's instance/domain/profile.</li> <li>• Configure and deploy the Content Engine EAR files which require access to the application server's instance/domain/profile directories.</li> <li>• Have permissions on devices/drives to read and write that are designated for external Content Engine file storage.</li> </ul>

User or group name	Description
Content Engine Installer (Windows): <i>ce_install_user</i>	<p>An operating system account you will use to install Content Engine.</p> <p><i>ce_install_user</i> can be the same user as the <i>ce_appserver_admin</i>.</p> <p>Use Windows administrative tools to add <i>ce_install_user</i> to the Local Administrators group and to the <i>ce_appserver_install_group</i>.</p>
Configuration Manager user (WebSphere, WebLogic, JBoss): <i>config_mgr_user</i>	<p>The operating system account you will use to run Configuration Manager. At several points in <i>Plan and Prepare Your Environment for IBM FileNet P8</i> you will be instructed to grant additional permissions to <i>config_mgr_user</i>, including the following permissions:</p> <p>Add <i>config_mgr_user</i> to the <i>ce_appserver_install_group</i>.</p> <p>(Windows only) Using Active Directory tools, add <i>config_mgr_user</i> to either the Power Users group or the Local Administrators group.</p> <p>At several points in the <i>IBM FileNet P8 Platform Installation and Upgrade Guide</i> you will be instructed to grant additional permissions to <i>config_mgr_user</i>, including the following permissions:</p> <ul style="list-style-type: none"> <li>• Execute permission to the Configuration Manager tool executable file, <i>configmgr.exe</i> (Windows) or <i>configmgr.sh</i> (UNIX).</li> <li>• Write permission to the directory where the Configuration Manager tool will create the configuration XML files. For example: <ul style="list-style-type: none"> <li>– the directory you specify using the optional <b>-path</b> parameter when you run the tool</li> <li>– the default directory, <i>ce_install_path/tools/configurationmanager/tasks</i>, if you don't specify a path parameter</li> </ul> </li> <li>• Read and write permission on the contents of the directory specified by <b>-path</b> parameter, or the default directory.</li> </ul>

User or group name	Description
Content Engine Operating System user: <i>ce_os_user</i>	<p>An operating system account you must log on as to create and configure the shared root directory of a file storage area or content cache area. See “Preparing storage areas for object stores” on page 21.</p> <p><b>Windows</b></p> <p>For Windows-based Content Engine and file storage areas, <i>ce_os_user</i> must reside in the same Windows domain or in trusted Windows domains as the servers that host Content Engine and the file storage area.</p>

### 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): <i>fnsw</i>	<p>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 <i>fnsw</i> user and the <i>fnsw_password</i> that is entered during Process Engine installation. Permissions on the Process Engine software directory are also set for this local user.</p> <p>Record this value in the Installation and Upgrade Worksheet.</p> <p>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 <i>fnsw</i> local user name to the installation program. Assign the <i>fnsw</i> local user to the following groups:</p> <ul style="list-style-type: none"> <li>• <i>fnusr</i></li> <li>• <i>fnadmin</i></li> <li>• <i>fnop</i></li> <li>• Administrators (if it exists)</li> </ul> <p>The Process Engine installation program sets the following policies for this user automatically:</p> <ul style="list-style-type: none"> <li>• Act as part of the operating system</li> <li>• Adjust memory quotas for a process</li> <li>• Log on as a service</li> <li>• Replace a process level token</li> </ul> <p>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.</p>
The password for the <i>fnsw</i> user (Windows): <i>fnsw_password</i>	<p>This password is for the <i>fnsw</i> local user.</p> <p>Record this value in the Installation and Upgrade Worksheet.</p> <p>Process Engine installation program on Windows prompts for the <i>fnsw_password</i>. Leaving the field for the <i>fnsw_password</i> blank during Process Engine installation causes the installation program to set the default password, BPMtemp1pzwd.</p> <p>If this password does not match the operating system password, these services will not start.</p> <p>Set this password to never expire. Process Engine activity ceases if the <i>fnsw_password</i> expires.</p>

User or group name	Description
An operating system group for Process Engine: <i>fnop</i>	<p>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.</p> <p>Record this value in the Installation and Upgrade Worksheet.</p> <p>Add the <i>fnsw</i> user to this group.</p> <p>If you will install Process Engine or run Process Engine Windows services as either the <i>fnsw</i> domain user or <i>pe_install_user_domain</i>, you must add that domain user to this local group.</p> <p>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 <i>fnop</i> 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.</p>
An operating system group for Process Engine (Windows): <i>fnusr</i>	<p>This operating system group is a group account for Process Engine whose members have non-administrator privileges on Process Engine files and databases.</p> <p>Record this value in the Installation and Upgrade Worksheet.</p> <p>The Process Engine installation asks if default users and groups will be used or if aliases will be defined. <i>fnusr</i> 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 <i>fnusr</i> group. Assign the following users to the <i>fnusr</i> group:</p> <ul style="list-style-type: none"> <li>• <i>fnsw</i></li> <li>• Administrator</li> </ul> <p>If you will install Process Engine or run Process Engine Windows services as either the <i>fnsw</i> domain user or <i>pe_install_user_domain</i>, you must add that domain user to this local group.</p>

User or group name	Description
An operating system group for Process Engine (Windows): <i>fnadmin</i>	<p>This operating system group is a group account for Process Engine whose members have all privileges on Process Engine files and databases.</p> <p>Record this value in the Installation and Upgrade Worksheet.</p> <p>The Process Engine installation asks if default users and groups will be used or if aliases will be defined. <i>fnadmin</i> 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 <i>fnadmin</i> group. Add the following users to this group:</p> <ul style="list-style-type: none"> <li>• <i>fns</i></li> <li>• Administrator</li> </ul> <p>If you will install Process Engine or run Process Engine Windows services as either the <i>fns</i> domain user or <i>pe_install_user_domain</i>, you must add that domain user to this local group.</p>
An operating system user for Process Engine (Windows): <i>pe_install_user_local</i>	<p>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 <i>fns</i> user or create this user or the <i>pe_install_user_domain</i> user (with the specified permissions) expressly for the purpose of running the Process Engine installation program.</p>

## Configuring Microsoft Windows

You must perform certain operating system procedures on all Windows-based servers where you will install FileNet 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” on page 17

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

“Configuring Windows for Enterprise Manager, .NET and COM compatibility clients” on page 17

You must first install Microsoft .NET Framework and either Web Services Enhancements (WSE) or Windows Communication Foundation (WCF) before you can install .NET API Clients, COM Compatibility clients, or Enterprise Manager.

“Configuring Windows for Content Engine on Active Directory” on page 17

If Windows Active Directory is your directory service, set the primary DNS server IP address on your Content Engine machine to the IP address of the machine where DNS is installed.



*“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 Content Search Engine”* on page 19

To configure Content Search Engine servers:

**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 Enterprise Manager, .NET and COM compatibility clients:**

You must first install Microsoft .NET Framework and either Web Services Enhancements (WSE) or Windows Communication Foundation (WCF) before you can install .NET API Clients, COM Compatibility clients, or Enterprise Manager.

To configure Windows for Enterprise Manager, .NET, and COM compatibility clients:

If you have not already done so, install the required Windows components.

Option	Description
Microsoft Windows XP, Microsoft Windows Server 2003	Microsoft .NET Framework 2.0 and Web Services Enhancements (WSE) 3.0
Content Engine version 4.5.1 Fix Pack 002 and higher with Microsoft Windows Vista, Microsoft Windows Server 2008, Microsoft Windows 7	Microsoft .NET Framework 3.0 and Windows Communication Foundation (WCF)

**Configuring Windows for Content Engine on Active Directory:**

If Windows Active Directory is your directory service, set the primary DNS server IP address on your Content Engine machine to the IP address of the machine where DNS is installed.

**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 18

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

“Adding inbound rules to the Windows 2008 firewall”

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 19

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 Windows for Content Search Engine:

To configure Content Search Engine servers:

1. Set the *k2\_os\_user* user as an administrator on each Windows Content Search Engine server. See “Specifying IBM FileNet P8 accounts” on page 30 for details on creating required users and groups.
2. On each Windows machine where you intend to install an additional locale (other than English), complete the following substeps. If you do not intend to install additional locales, skip this step.
  - a. Install the Java™ 1.4 SDK.
  - b. Set the PATH environment variable on the Windows machine to *Java (SDK) 1.4 install\_path\bin*, where *Java (SDK) 1.4 install\_path* is the install path to Java 1.4 SDK. For example, the install path might be C:\Program Files\Java\jdk1.4.2\_17.
3. Install Java 1.5 SDK and set the JAVA\_HOME environment variable on each machine where you will install Content Search Engine software, as follows:

- a. Install the Java 1.5 SDK.
- b. Open the Windows Control Panel.
- c. Choose **System**.
- d. Click the **Advanced** tab.
- e. Click **Environment Variables** .
- f. Click **New** under **System Variables**.
- g. Set the variable information in the following way:  
Variable name: JAVA\_HOME  
Variable value: *Java (JDK) 1.5 install path*. For example, the install path might be C:\Program Files\Java\jdk1.5.0\_11.

**Important:** The Content Search Engine installation program will not allow you proceed until the JAVA\_HOME environment variable is set.

4. Set the PATH environment variable in the following way:
  - a. Open the System control panel.
  - b. Click the **Advanced** tab.
  - c. Click **Environment Variables**.
  - d. Click **PATH** under **System Variables**.
  - e. Append the following variable information: ;%JAVA\_HOME%\bin

## 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”

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.

## Preparing storage areas for object stores

To prepare for file storage, you must prepare the locations where file stores will go, configure remote access protocol, and, if you plan to implement content-based retrieval, perform security configurations.

An object store can have up to three types of storage areas for the content of documents and business objects:

### file storage area

A file storage area stores content in a network-accessible directory. The path name to this directory specifies the location of the file storage area.

For information about file storage areas, see the IBM FileNet P8 help topic **System Administration** → **Content Engine Administration** → **Content storage** → **File storage areas**.

### fixed storage area

A fixed storage area is a file storage area on a large-capacity, (possibly) write-once, fixed content device.

For information about fixed storage areas, see the IBM FileNet P8 help topic **System Administration** → **Content Engine Administration** → **Content storage** → **File storage areas**.

### database storage area

A database storage area stores content as binary large objects (BLOBs) in a database.

A *file storage area* refers only to a network-accessible directory that is not on a fixed content device. The names of file storage areas and database storage areas must be unique within an object store. File storage areas on encrypted NTFS devices are not supported. However, the Decru, Vormetrics, and IBM Encryption Expert hardware-based encryption solutions are supported.

By default, the Create Object Store wizard creates a database storage area. If your object stores will use database storage areas only, you can skip the rest of this task, provided that one of the following conditions is met:

- Your database type is non-DB2.
- Your database type is DB2 and your database storage areas will not contain large content elements (larger than 300 MB, for example).

Besides creating a database storage area, the Create Object Store wizard allows you to create an initial file storage area or initial fixed storage area. But the wizard requires that you first do at least one of the following, depending on the type of storage areas you want for your object stores:

- For fixed storage areas, create at least one fixed content device (typically via Enterprise Manager). Multiple fixed storage areas can share the same fixed content device, or a fixed storage area can have its own fixed content device. If the content of all your object stores will be in fixed storage areas only, create your fixed content devices now, and skip the rest of this topic. To create a fixed content device, refer to the procedures in IBM FileNet P8 help topic **System Administration** → **Content Engine Administration** → **Content storage** → **File storage areas**.
- For file storage areas, prepare locations on one or more file servers (which usually are not a machine where you installed Content Engine), as shown in the remainder of this task.
  - “Configuring file servers for file storage areas”  
You must configure file servers for the initial file storage areas of the object stores to be created, and for additional file storage areas of existing object stores.
  - “Users and groups” on page 23  
The following table shows the operating system users and groups on the machine where Content Engine is to be deployed that are involved in securing file storage areas. These users and groups must be defined in the directory service that the operating system uses to authenticate users, which is not necessarily the same directory service that Content Engine Server uses.
  - “Configuring the remote access protocol on the client machine” on page 25  
When configuring the remote file access protocol (NFS or CIFS), the client machine is the one where Content Engine Server or Content Search Engine are running. Configuring the remote access protocol (NFS or CIFS) means designating a directory (where content is to be stored) so that it appears to be on the local file system of the client machine.
  - “Preparing storage areas to support content search functionality” on page 25  
To prepare your system for index area creation, each file storage area that will be full-text indexed must be accessible by both the Content Engine and the Autonomy K2 server that will perform the full-text indexing.

### Configuring file servers for file storage areas:

You must configure file servers for the initial file storage areas of the object stores to be created, and for additional file storage areas of existing object stores.

Refer to the *IBM FileNet P8 Hardware and Software Requirements* for currently supported operating systems for file servers.

Configuring a file server for file storage areas involves the following general steps, which are described in more detail in the procedures later in this task.

To configure file servers for file storage areas:

1. Create or designate an existing top-level directory on the file server where file storage areas will reside.
2. Secure the directory so only Content Engine Server and Content Search Engine can access it.
3. Expose the directory via the remote file access protocol that applies to the operating system of the file server.
4. (Best practice) Under the top-level directory, create a subdirectory for each file storage area you intend to create. If you decide to put a file storage area directly within a top-level directory, rather than in a subdirectory, and you later

decide to create an additional file storage area on this file server, you will have to create another top-level directory for it, because you will not be able to use the previously created top-level directory.

*“Remote file access protocols”*

The supported remote file access protocols between Content Engine and a file server are: Common Internet File System (CIFS), Network File System (NFS), and Distributed File System (DFS). DFS is supported if you are using it to manage a file storage area; however, the replication feature of DFS is not supported.

*Remote file access protocols:*

The supported remote file access protocols between Content Engine and a file server are: Common Internet File System (CIFS), Network File System (NFS), and Distributed File System (DFS). DFS is supported if you are using it to manage a file storage area; however, the replication feature of DFS is not supported.

The communication method between the Content Engine machine and the file server depends on the operating systems running on the two machines, as shown in the following table:

Content Engine Operating System	File Server Operating System	File Access Protocol
Windows 2003	Windows 2003	CIFS
UNIX	UNIX	NFS
UNIX	Windows 2003	NFS

Install a UPS power supply backup system on each file server to enable graceful shutdown. Loss or corruption of data will result if a file server does not shut down gracefully.

**Users and groups:**

The following table shows the operating system users and groups on the machine where Content Engine is to be deployed that are involved in securing file storage areas. These users and groups must be defined in the directory service that the operating system uses to authenticate users, which is not necessarily the same directory service that Content Engine Server uses.

The user and group account variables in this table are placeholders for the actual account names that you designate.

Users and Groups	Role
Content Engine operating system user (ce_os_user)	The user under which Content Engine Server runs (typically, the user that starts Content Engine Server).
K2 operating system user (k2_os_user)	The user under which Content Search Engine runs (typically, the user that starts Content Search Engine).
Content Engine operating system group (ce_os_group)	The group that contains: <ul style="list-style-type: none"> <li>• Content Engine operating system user</li> <li>• K2 operating system user</li> </ul>



For details on file storage area security, see the IBM FileNet P8 help topic **System Administration** → **Enterprise-wide Administration** → **FileNet P8 Security** → **Authorization** → **Storage area security**.

“Configuring a Windows-based file server for a Windows client using CIFS”  
You must configure security permissions on the directories where file storage areas are going to be located.

“Configuring a Windows-based file server for a UNIX client using NFS”  
To configure Windows Services for NFS, use the procedures in Microsoft documentation.

*Configuring a Windows-based file server for a Windows client using CIFS:*

You must configure security permissions on the directories where file storage areas are going to be located.

To configure a Windows-based file server:

1. Log on to the Windows file server as *ce\_os\_user*.
2. Create (or designate) a directory *fsa1* where content will be stored. For example:  
`C:\> md c:\filenet\file_stores\fsa1`
3. Navigate in Windows Explorer to *fsa1*, right-click the file icon, and choose **Properties**.
4. In the Security tab, click **Advanced**.
5. In the **Advanced Security Settings** dialog box:
  - a. Grant Full Control to *ce\_os\_user* and *ce\_os\_group*, and select **This Folder, subfolders, and files** from the **Apply onto** drop-down list.
  - b. Remove all other users and groups in the **Permission entries** table.
  - c. Click **OK**.
6. In the Sharing tab, perform the following tasks:
  - a. Click **Share this folder** and click **Permissions**.
  - b. Grant Full control to *ce\_os\_user* and *ce\_os\_group*.
  - c. Remove all other users and groups in the **Permission entries** table.
  - d. Click **OK**.

*Configuring a Windows-based file server for a UNIX client using NFS:*

To configure Windows Services for NFS, use the procedures in Microsoft documentation.

1. Do all the steps in “Configuring a Windows-based file server for a Windows client using CIFS.”
2. Use the procedures in Microsoft documentation to configure Windows Services for NFS to expose *fsa1*.

**Tip:**

- Windows Services for NFS is an optional Windows component bundled with Windows Server 2003 R2.
- As part of configuring Windows Services for NFS, you must set up a mapping of Windows users and groups to UNIX users and groups. When setting up the mapping for *ce\_os\_user* and *ce\_os\_group*, you must specify the same UID (UNIX user ID) and GID (UNIX group ID) that these accounts have on the machine where Content Engine Server is installed.



### **Configuring the remote access protocol on the client machine:**

When configuring the remote file access protocol (NFS or CIFS), the client machine is the one where Content Engine Server or Content Search Engine are running. Configuring the remote access protocol (NFS or CIFS) means designating a directory (where content is to be stored) so that it appears to be on the local file system of the client machine.

To configure remote access protocol:

To configure Windows-based Content Engine Server to talk to a Windows file server via CIFS:

1. If both Content Engine Server and the file server are in the same Windows domain, no action is required. If they are in different domains, establish access to the file server machine from the machine where you will install Content Engine Server before creating the file storage areas.

### **Preparing storage areas to support content search functionality:**

To prepare your system for index area creation, each file storage area that will be full-text indexed must be accessible by both the Content Engine and the Autonomy K2 server that will perform the full-text indexing.

Content Engine Operating System User (*ce\_os\_user*) must have permissions to the following directories:

- File storage area directories (read and write)
- Collections directory (read and write)
- Collections temp directory (read and write)

K2 Operating System User (*k2\_os\_user*) must have permissions to the following directories:

- File storage area directories (read)
- Collections directory (read and write)
- Collections Temp directory (read and write)

If Content Engine and Autonomy K2 are installed on separate machines, then the file store must be mounted and accessible to both the Content Engine and the Autonomy K2 servers. For Windows, the file store path must be a UNC path name accessible to the Autonomy K2 machine. For UNIX, the file store must be NFS-mounted on the Autonomy K2 machine with the same name as it appears on all other machines.

#### **Related tasks**

“Creating Content Engine operating system accounts” on page 10

The IT Administrator must create several operating system accounts required by FileNet P8 components during installation.

“Creating Content Search Engine accounts” on page 36

If you are installing Content Search Engine, you must create new or designate existing Autonomy K2 security accounts.

## **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 29

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 30

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](http://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 29.

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 Content Engine directory server accounts”

Create new or designate existing directory server installation accounts for Content Engine.

“Creating Process Engine directory server accounts” on page 33

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

“Creating Application Engine or Workplace XT accounts” on page 36

Create new or designate existing directory server accounts for Application Engine or Workplace XT.

“Creating Content Search Engine accounts” on page 36

If you are installing Content Search Engine, you must create new or designate existing Autonomy K2 security accounts.

### Creating Content Engine directory server accounts:



Create new or designate existing directory server installation accounts for Content Engine.

The Security Administrator should perform this task.

To create directory server accounts:

Create the following users and groups:

User or group name	Description
Bootstrap user name: <i>ce_bootstrap_admin</i>	<p>A directory service and application server account that is stored in the <code>CEMPBoot.properties</code> file that is archived in the Content Engine EAR file. Also known as Content Engine System User.</p> <p>Content Engine uses <i>ce_bootstrap_admin</i> to establish a connection with the application server, access the application server's JNDI tree, and look up the data sources for accessing the GCD.</p> <p>You should not use this account as an all-purpose administrative account. For example, if you had to log on to some other application using the <i>ce_bootstrap_admin</i> account and provided the wrong password several times, thereby exceeding the number of allowable login failures, this account could be locked out of the directory server, which would mean that Content Engine would not start.</p> <p><b>Restriction:</b> If you are deploying Content Engine on an application server with federated user repositories and with multiple realms in your FileNet P8 domain, be sure that no two realms contain the same short name for this user; otherwise, this user will not be able to create the GCD.</p> <p>See the IBM FileNet P8 help topic <b>System Administration</b> → <b>Enterprise-wide Administration</b> → <b>FileNet P8 Security</b> → <b>Users and groups</b> for information on how <i>ce_bootstrap_admin</i> is the account used to create the initial FileNet P8 domain.</p>

User or group name	Description
GCD Administrator: <i>gcd_admin</i>	<p>A directory service account that has Full Control access to the domain object for Content Engine.</p> <p>The initial <i>gcd_admin</i> is created by Configuration Manager using the account entered into its Create Bootstrap Properties panel for the Bootstrap user (<i>ce_bootstrap_admin</i>).</p> <p>Log on as <i>gcd_admin</i> in order to:</p> <ul style="list-style-type: none"> <li>• Create the GCD by launching the Configure New Domain Permissions wizard the first time you start Enterprise Manager to establish the IBM FileNet P8 domain (see in the <i>IBM FileNet P8 Platform Installation and Upgrade Guide</i>).</li> <li>• Carry out administrative tasks for the FileNet P8 domain.</li> </ul> <p>For more information, see the IBM FileNet P8 help topic <b>System Administration</b> → <b>Enterprise-wide Administration</b> → <b>FileNet P8 Security</b> → <b>Users and groups</b>.</p>
Object Store Administrator: <i>object_store_admin, object_store_admin_group</i>	<p>A directory service account that can administer an object store by having Full Control access to it. You can also grant Full Control to an object store to group accounts, thereby making all members of the group object store administrators.</p> <p>Use Enterprise Manager's Create an Object Store wizard to specify which user or group accounts should be <i>object_store_admin_group</i> (see <i>inst_ce_create_obj_store</i> in the <i>IBM FileNet P8 Platform Installation and Upgrade Guide</i>). Each object store could have a different set of object store administrators, depending on your security design.</p>



User or group name	Description
Directory service user: Active Directory (Referred to as "Directory service bind user name" in Configuration Manager.) <i>ce_service_user</i>	<p>An Active Directory user account that Content Engine uses to connect to Active Directory.</p> <p><i>ce_service_user</i> performs the following roles:</p> <ul style="list-style-type: none"> <li>• Acts as the bind user specified by the application server to search through realms to authenticate a user when the user logs in to a Content Engine client such as Workplace.</li> <li>• Acts as the user specified in the GCD that searches users and groups to authorize access to a specific FileNet P8 object after a user has been authenticated.</li> </ul> <p>Using Active Directory tools, grant <i>ce_service_user</i> at least the following permissions:</p> <ul style="list-style-type: none"> <li>• Read access rights (specifically the Read All Properties permission) to the forest-wide configuration directory partition and the domain directory partition in each desired domain in the Active Directory forest. Because Authenticated Users by default is a member of the Pre-Windows 2000 Compatible Access group which has these permissions, you will need to assign the permissions to <i>ce_service_user</i> only if the default is modified or Authenticated Users access rights are restricted.</li> </ul> <p>Provide the fully qualified distinguished name of <i>ce_service_user</i> as the directory service bind user name while running Configuration Manager and also when you run the Enterprise Manager Directory Configuration Wizard.</p>

### 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 13 for procedures for creation of local users and groups.

Create the following users and groups:

User or Group	Description
<p>An optional domain user used to install Process Engine and to start and stop Process Engine software and services (Windows): <i>fnsw</i></p> <p>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.</p>	<p>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 <i>fnsw</i> local user and permissions on the software directory on the Process Engine are set for the local user and groups.</p> <p>Record this value in the Installation and Upgrade Worksheet. Assign the <i>fnsw</i> domain user to the following local groups on the Process Engine:</p> <ul style="list-style-type: none"> <li>• <i>fnusr</i></li> <li>• <i>fnadmin</i></li> <li>• <i>fnop</i></li> <li>• Administrators</li> </ul> <p>Set the following rights to this user in the local security policy on the machine where Process Engine will be installed:</p> <ul style="list-style-type: none"> <li>• Act as part of the operating system</li> <li>• Adjust memory quotas for a process</li> <li>• Log on as a service (if this domain user will also run the Process Engine Windows services)</li> <li>• Replace a process level token</li> </ul> <p>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.</p>
<p>The password for the optional <i>fnsw</i> domain user (Windows): <i>fnsw_password</i></p>	<p>This password is for the <i>fnsw</i> domain user.</p> <p>Record this value in the Installation and Upgrade Worksheet.</p> <p>Process Engine installation program on Windows prompts for the <i>fnsw_password</i>.</p> <p>On Windows the IMS ControlService and Process Engine Services Manager service are configured to start with the <i>fnsw</i> local user and the <i>fnsw_password</i> that is entered during Process Engine installation.</p> <p>Set this password to never expire. Process Engine activity ceases if the <i>fnsw_password</i> expires.</p>

User or Group	Description
An optional domain user for Process Engine (Windows): <i>pe_install_user_domain</i>	<p>This is a domain user account that can be used to install Process Engine software.</p> <p>Set the following rights to this user in the local security policy on the machine where Process Engine will be installed:</p> <ul style="list-style-type: none"> <li>• Act as part of the operating system</li> <li>• Adjust memory quotas for a process</li> <li>• Log on as a service (if this domain user will also run the Process Engine Windows services)</li> <li>• Replace a process level token</li> </ul> <p>You can log on as the <i>fnsw</i> user or create this user or the <i>pe_install_user_local</i> 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.</p>
Process Engine service user: <i>pe_service_user</i>	<p>Process Engine uses the <i>pe_service_user</i> when connecting to the Content Engine server. This user must belong to the Process Engine Administrator group.</p> <p>Record this value in the Installation and Upgrade Worksheet. The name will be required input when configuring the Process Task Manager.</p>
Process Engine administrators group: <i>pe_admin_group</i>	<p>Members of this group automatically have administrative privileges for Process Engine.</p> <p>Record this value in the Installation and Upgrade Worksheet. The name will be required input when configuring the Process Task Manager.</p>
Process Engine configuration group: <i>pe_config_group</i>	<p>(Optional) A valid group name. Members of this group automatically have configuration privileges for the Process Engine workflow database.</p> <p>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.</p> <p>Record this value in the Installation and Upgrade Worksheet. The name will be input when configuring the Process Task Manager.</p>

## Creating Application Engine or Workplace XT accounts:

Create new or designate existing directory server accounts for Application Engine or Workplace XT.

This task should be performed by the Application Engine Administrator.

To create Application Engine or Workplace XT accounts:

Create the following users and groups. All IBM FileNet Workplace accounts, as well as accounts for other client applications and expansion products that use Content Engine or Application Engine, must have passwords.

User or group name	Description
Application Engine or Workplace XT installer account (Windows): <i>ae_install_user</i> , <i>wpxt_install_user</i>	The account you will use to log on to a Windows machine and launch the Application Engine or Workplace XT installation program. This account must be a Windows Local administrator or a user with equivalent permissions.
Application server account: <i>ae_deploy_user</i> , <i>wpxt_deploy_user</i>	This account will have permissions to deploy an application. The account can be the same as the Application Engine or Workplace XT installer account.
Application Engine Administrators: <i>ae_admin_user</i> , <i>wpxt_admin_user</i>	These accounts will serve in the role of Application Engine administrator. The role applies to both Application Engine or Workplace XT. You will specify these accounts as members of the Application Engine administrator role when you set bootstrap preferences. These accounts must have passwords.

In addition to the requirements above, the installer account (*ae\_install\_user* or *wpxt\_install\_user*) and the Application server account (*ae\_deploy\_user* or *wpxt\_deploy\_user*) and need read/write/execute permission to these directories and files:

### Installation paths

Grant *ae\_install\_user* read and write permission to the *ae\_install\_path*.

Grant *wpxt\_install\_user* read and write permission to the *wpxt\_install\_path*.

### WebSphere Application Server

*WAS\_HOME*/profiles/default/installedApps/*node\_name*/  
app\_engine\_war.ear/app\_engine.war

*WAS\_HOME*/profiles/default/config/cells/*machine\_name*/Node01cell1/  
nodes/*machine\_name*/Node01/serverindex.xml

## Creating Content Search Engine accounts:

If you are installing Content Search Engine, you must create new or designate existing Autonomy K2 security accounts.

The IT Administrator should perform this task.

To create accounts for Content Search Engine:

Create the following users and groups:

User or group name	Description
K2 Security Group: <i>k2_sec_group</i>	<p>Autonomy K2 security group used to secure K2 collections. Later, you will specify this group in the <b>User Group</b> field of the Verity Domain Configuration tab when you configure CBR in the Enterprise Manager root domain property sheet.</p> <p><b>Windows</b></p> <p>Active Directory group when Autonomy K2 is installed on a machine in a Windows domain.</p> <p>Windows local group when Autonomy K2 is installed on a machine in a Windows workgroup.</p>
K2 Security User: <i>k2_sec_user</i>	<p>Autonomy K2 security user account, used by Content Engine when logging onto the Autonomy K2 Master Administration Server to perform Content-Based Retrieval (CBR). Later, you will specify this account in the <b>Verity Username</b> field in the Verity Domain Configuration when you configure CBR in Enterprise Manager. This user must be a member of the <i>k2_sec_group</i> and must be defined as an authorized K2 administrator in the K2 dashboard. The <i>k2_sec_user</i> and <i>k2_os_user</i> can be the same user. All permissions listed for both users must be assigned.</p>
K2 Operating System User: <i>k2_os_user</i>	<p>Windows services will run as this user. This user must be given administrator privileges for Windows on all machines on which the Autonomy K2 software will be installed.</p> <p>If Content Search Engine is to be in a Windows workgroup, <i>k2_os_user</i> must be given the <i>log on as a service</i> right in the Local Security Policy. If Content Search Engine is to be in a Windows domain, <i>k2_os_user</i> must be given the <i>log on as a service</i> in the Domain Security Policy.</p> <p>This user also requires read/write permissions to the K2 collections directory, the collections temp directory and to the file system that contains the file storage areas and full-text index collections. The Autonomy K2 software needs to read the file storage areas and write the full text index collections as part of the full text indexing operation.</p>

## 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 65 before you begin your preparation tasks.

“Creating Content Engine database accounts”

Use your database tools to create new or designate existing database accounts for Content Engine, as shown in the following table.

“Creating Process Engine database accounts” on page 39

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

“Preparing Oracle server” on page 40

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 52

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 54

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 Content Engine database accounts

Use your database tools to create new or designate existing database accounts for Content Engine, as shown in the following table.

Create the following users and groups:

User or group name	Description
Database user name (Oracle): <i>ce_db_user</i>	<p>The tablespace owner accounts that Content Engine uses to access Oracle. Use one account for each object store tablespace and one for the GCD tablespace.</p> <p>Grant each <i>ce_db_user</i> at least the following permissions:</p> <ul style="list-style-type: none"> <li>• CREATE SESSION</li> <li>• CREATE TABLE</li> <li>• SELECT on pending_trans\$</li> <li>• SELECT on dba_2pc_pending</li> <li>• SELECT on dba_pending_transactions</li> <li>• SELECT on DUAL</li> <li>• SELECT on ALL_TAB_COLS (GCD creation only)</li> <li>• CREATE SEQUENCE (Object Store creation only)</li> <li>• SELECT on product_component_version (Object Store creation only)</li> </ul> <p>In addition to the above:</p> <ul style="list-style-type: none"> <li>• On Oracle 10.2.0.4, Oracle 11.1.0.6.0 or later (where both the JDBC client and the database server are at those levels) grant EXECUTE on dbms_xa</li> <li>• On Oracle releases earlier than 10.2.0.4, see Oracle Metalink document ID 436362.1 for required patches, or grant EXECUTE on dbms_system</li> </ul> <p>Several of these permissions are required by Content Engine JDBC XA transactions.</p>

## 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): <i>f_sw</i>	<p>The database runtime user for Process Engine. The user is defined when the <i>pe_filenet_site.sql</i> script runs.</p> <p>The default value is set to <i>f_sw</i>. The script can be edited to change the user name.</p> <p>Record the value for this user in the Installation and Upgrade Worksheet.</p>

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

## 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 41

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

“Running Process Engine pre-installation scripts (Oracle)” on page 48

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 11g 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 43  
Install the Oracle software and configure the database server.
- “Configuring Oracle database character sets” on page 44  
Determine the Oracle database character set to use for the Content Engine and Process Engine databases.
- “Creating an Oracle database” on page 44  
Create one or more databases, depending on whether one or more IBM FileNet P8/IBM FileNet P8 components will share the database.
- “Creating tablespaces for the GCD” on page 44  
Create an Oracle tablespaces for the GCD database.

“Creating Oracle tablespaces for Content Engine object stores” on page 45  
Create Oracle tablespaces for a Content Engine object store.

“Creating tablespaces for Process Engine” on page 45  
Create Oracle tablespaces for Process Engine.

“Configuring automatic transaction recovery” on page 47

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 47

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.

“Configuring Oracle XA transactions” on page 47

Configure Oracle XA transactions for Content Engine by running several Oracle SQL scripts.

#### *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 a 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 P8/IBM 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 the GCD:*

Create an Oracle tablespaces for the GCD database.

1. Using Oracle Enterprise Manager or SQL\*Plus, create a user (*ce\_db\_user*), password, and default tablespace in the Oracle database for the GCD that

Content Engine will access. See Creating Content Engine database accounts for information about the user and required permissions. If one or more object store tablespaces and the GCD tablespace share a physical database, they must not share the same Oracle user. Create different, unique Oracle users for each in this case.

2. Tablespace names must contain only alphanumeric and underscore characters. Names must start with an alphabetic character and must be at most 18 characters long. For performance reasons, you should specify locally managed, instead of dictionary managed, tablespaces. (The tablespaces you create via Oracle Enterprise Manager are locally managed by default.)

The following table shows the recommended minimum sizes of the permanent and temporary tablespaces for each object store that Content Engine will access. (The tablespace names shown in the table are arbitrary.)

Tablespace Name	Tablespace Type	Minimum Size	Description
<i>gcd</i>	Permanent	100 MB	Permanent tablespace for the GCD
<i>tempgcd</i>	Temporary	2 GB	Temporary tablespace for the GCD

*Creating Oracle tablespaces for Content Engine object stores:*

Create Oracle tablespaces for a Content Engine object store.

To create Oracle tablespaces:

1. Using Oracle Enterprise Manager or SQL\*Plus, create a user (*ce\_db\_user*), password, and default tablespace in the Oracle database for each object store that Content Engine will access. See Creating Content Engine database accounts for information about the user and required permissions.
2. Create separate users for every object store tablespace.

Tablespace names used by Content Engine must contain only alphanumeric and underscore characters. Names must start with an alphabetic character and must be at most 18 characters long.

For performance reasons, you should specify locally managed, instead of dictionary managed, tablespaces. (The tablespaces you create via Oracle Enterprise Manager are locally managed by default.)

The following table shows the recommended minimum sizes of the permanent and temporary tablespaces for object stores that Content Engine will access. The temporary tablespace can be shared by multiple object stores.

Tablespace Name	Tablespace Type	Minimum Size	Description
objectstore1	Permanent	200 MB	Permanent tablespace for object store
tempobjectstore1	Temporary	2 GB	Temporary tablespace for object store

*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
<i>vwdata_ts</i>	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.
<i>vwtemp_ts</i>	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.
<i>vwindex_ts</i> (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.

Tablespace Name	Tablespace Type	Minimum Size (MB)	Description
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.

*Configuring Oracle XA transactions:*

Configure Oracle XA transactions for Content Engine by running several Oracle SQL scripts.

To configure XA transactions:

1. Log on the Oracle database as either SYSOPER or SYSDBA.
2. Locate and run the `initxa.sql` script in the `ORACLE_HOME\javavm\install` directory.



3. If the script fails to run because the database memory space is too small, locate and run the `initjvm.sql` script in the `ORACLE_HOME\javavm\install` directory. Additional memory-related parameters might need to be adjusted to successfully run this script.

### 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 49*

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 50*

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 51*

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 52*

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 52*

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	<p>A wrapper script that runs the following scripts:  pe_filenet_site.sql,  pe_create_stored_procedures.sql, and  pe_grant_sp_permissions.sql.</p> <p>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.</p>
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 51 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 51 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  Select on sys.dba_users  Select on sys.dba_tablespaces  Create public synonym  Drop public synonym	filenet	No	Data tablespace set  Temp tablespace set  Index tablespace set  Quota 0 on system  Quota unlimited on default tablespace  Quota unlimited on temp tablespace  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 <code>fn_errortxt</code> 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\_obnoxioiu\$\_passwrđ) in the following command:  
grant dba to &2 identified by change\$this\_obnoxioiu\$\_passwrđ;
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 fns user. (On Windows platforms, fns is created by the Process Engine installer; on UNIX platforms, you manually create fns 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

- 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.

- 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:

- Run the following at a command prompt on the Process Engine:

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

- 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
```

- 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 65 before you begin your preparation tasks.
- Review the following planning considerations:
  - “Application server planning considerations” on page 4
  - “Creating Content Engine application server accounts” on page 56  
Create new or designate existing application server accounts for Content Engine, as shown in the following table.
  - “Configuring WebSphere for Content Engine” on page 58  
You must prepare IBM WebSphere Application Server before you install Content Engine. You must create a WebSphere profile for the Content Engine application and set the environment variables for the database connection.
  - “Configuring WebSphere Application Server for Application Engine or Workplace XT” on page 62  
You must install WebSphere Application Server on the machine where you are going to install and deploy Application Engine or Workplace XT.
  - “Configuring Process Engine clients for ORB” on page 62  
Process Engine clients require either the IBM or the Sun Object Request Broker (ORB).

“Configuring the documentation server” on page 62

If you want to have a local documentation installation instead of linking to the information center at [www.ibm.com](http://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.

### **Creating Content Engine application server accounts**

Create new or designate existing application server accounts for Content Engine, as shown in the following table.



User/Group	Description
<b>Application server administrator user name</b> <i>ce_appserver_admin</i>	Create an application server administrative account that can log on to Content Engine's application server administration console.
<b>Administrative Console user</b> <i>ce_appserver_console_admin</i>	<p>WebSphere Application Server:</p> <p>There are several things to consider when creating the <i>ce_appserver_admin</i> account for WebSphere Application Server. When you use WebSphere Application Server tools to create the WebSphere Application Server profile that will contain Content Engine, at the same time you also create an administrative account (<i>ws_admin</i>) and decide whether to enable security.</p> <p>If you do not enable security, then you can login to WebSphere Application Server using any account. Later on when you run Configuration Manager, the Set Properties for WebSphere Application Server configuration step creates the <i>ce_appserver_admin</i> account.</p> <p>If you enable security, then the administrative account (<i>ws_admin</i>) you created while creating the profile must be the account you use later on as <i>ce_appserver_admin</i>. This account is a WebSphere Application Server Local account. However, if you configure LDAP (either manually using the WebSphere Application Server console or later on using the Configure LDAP task in Configuration Manager) in the application server using Federated Repository and if this local <i>ce_appserver_admin</i> account is also in an LDAP directory that is configured for Content Engine authentication, you will lock yourself out of WebSphere Application Server. Therefore, the <i>ws_admin</i> account must be unique and must not be used by any other user that is in an LDAP directory that will be configured for Content Engine authentication.</p> <p>If you enable security but plan on using WebSphere Application Server Stand Alone mode, the <i>ws_admin</i> account can also be in the configured directory server, as long as there is not a WebSphere Application Server local account with the same name.</p>

User/Group	Description
<b>Application server administrator user name (continued)</b> <i>ce_appserver_admin</i>	<p>Description of the WebSphere Application Server administrative account:</p> <ul style="list-style-type: none"> <li>This administrative account can be the same as the Content Engine system user (<i>ce_bootstrap_admin</i>), if you enter the same credentials for both in Configuration Manager, and provided that you are using an LDAP account, and also that the account will be a P8 Domain Administrator (<i>gcd_admin</i>) specified during GCD creation.</li> <li>Minimum required permissions for <i>ce_appserver_admin</i>: Full administrative control over the WebSphere Application Server domain that contains Content Engine.</li> <li>If your site uses Federated Repository, <i>ce_appserver_console_admin</i> must be a unique user across all federated realms including the WebSphere Application Server Local repository.</li> <li>After Content Engine installation is complete, you can reduce the account's permissions to a lesser role within WebSphere Application Server, such as Configurator.</li> </ul> <p>You must use the <i>ce_appserver_admin</i> account to perform the following tasks:</p> <ul style="list-style-type: none"> <li>Create directory service providers within the application server.</li> <li>Create JDBC providers and data sources for database connectivity.</li> <li>Deploy the Content Engine application.</li> <li>Stop and restart servers and cluster members (WebSphere Application Server).</li> <li>When you enable WebSphere Application Server Global Security as a post-install step, you must use <i>ce_appserver_console_admin</i> to login to the WebSphere Application Server console and run Configuration Manager and any scripts.</li> </ul>
<b>Administrative Console user (continued)</b> <i>ce_appserver_console_admin</i>	

## Configuring WebSphere for Content Engine

You must prepare IBM WebSphere Application Server before you install Content Engine. You must create a WebSphere profile for the Content Engine application and set the environment variables for the database connection.

1. "Creating the WebSphere profile for Content Engine" on page 59  
You must create an IBM WebSphere Application Server profile for Content Engine if you do not already have a profile.
2. "Specifying the WebSphere environment variables" on page 59  
You must specify the IBM WebSphere Application Server environment variables so that Content Engine can access its databases.

3. "Setting the primary administrative user name" on page 61  
If you are using IBM WebSphere Application Server federated repositories for LDAP authentication, you must ensure that the name you entered for the WebSphere Application Server primary administrative user name is unique across all realms.
4. "Setting host aliases for deployment on multiple servers" on page 61  
If you are deploying Content Engine to multiple IBM WebSphere Application Server servers on the same WebSphere node, you must define the host alias and port numbers.
5. "Setting permissions for the Configuration Manager user" on page 61  
You must create an application server account with certain directory permissions that you will use later on to start the Configuration Manager tool.

### Creating the WebSphere profile for Content Engine:

You must create an IBM WebSphere Application Server profile for Content Engine if you do not already have a profile.

To create the WebSphere profile for Content Engine:

1. Run the command script at one of the following (default) locations to create a new profile.

Option	Description
Windows	C:\Program Files\IBM\WebSphere\AppServer\bin\manageprofiles.bat

2. Record the path to your new profile in the **Application server installation directory** property in your installation worksheet, as you must specify the path later when you configure Content Engine.
3. Grant write permission to the group *ce\_appserver\_install\_group* (the user who runs Configuration Manager belongs to this group) on the following files in the logs directory of the WebSphere profile for Content Engine:
  - wsadmin.traceout
  - wsadmin.valout

You can find these files in one of the following locations:

Option	Description
Windows	C:\Program Files\IBM\WebSphere\AppServer\profiles\profile_name\logs

where *profile\_name* is the name of the WebSphere profile (for example, AppServer01).

### Specifying the WebSphere environment variables:

You must specify the IBM WebSphere Application Server environment variables so that Content Engine can access its databases.

Refer to the *IBM FileNet P8 Hardware and Software Requirements* for information on the JDBC driver file for the database type that you need for the Global Configuration Data (GCD) or for an object store you will be creating later.

To specify the WebSphere environment variables:

1. Install JDBC drivers on the server where WebSphere Application Server is installed.
  - a. Obtain the JDBC drivers for your database type.
 

**Oracle** Access the [http://www.oracle.com/technology/software/tech/java/sqlj\\_jdbc/index.html](http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html) Web site and find the JDBC driver file that matches the version of the JDK that is installed on the on the server where WebSphere Application Server is installed.
  - b. Copy the JDBC driver file to the following suggested location:
 

**Windows**  
C:\jars

Do not copy the file to ...WebSphere\AppServer\lib\ext.
2. Start the WebSphere Application Server administrative console and log on to your Content Engine profile as *ce\_appserver\_console\_admin*, the Administrator Console User.
3. Navigate to **Environment** → **WebSphere Variables** and specify the JDBC driver path:
  - a. Select **Cell scope** from the **All scopes** list.
  - b. Click **New** to create a WebSphere Application Server variable whose name is one of the JDBC environment variables shown in the Database environment variables table below.
  - c. Set the value of the variable to the JDBC driver path that you specified when you installed the JDBC drivers on the IBM WebSphere Application Server machine.
  - d. Save your change to the master configuration.
  - e. Select **Node scope** from the **All scopes** list.
  - f. In the table of substitution variables, click the *item name* in the **Name** column that corresponds to the JDBC environment variable for your database type in the Database environment variables table below.

Table 1. Database environment variables

Database	JDBC Environment Variable
Oracle	ORACLE_JDBC _DRIVER_PATH

- g. Set the value of the *name\_JDBC\_DRIVER\_PATH* item to the JDBC driver path you specified (/opt/jars or C:\jars).
  - h. Save your changes to the master configuration.
4. Navigate to **Servers** → **Application servers** → *server1* → **Java and Process Management** → **Process Definition** → **Java Virtual Machine**, and set the initial and maximum heap sizes, where *server1* is the name of the server where you will deploy Content Engine.
  - a. Set the values for the initial and maximum heap sizes:

Parameter	Value (in MB)
Initial Heap Size	At least 512
Maximum Heap Size	1024 or a size consistent with available RAM on the machine where WebSphere Application Server is installed

- b. Save your changes to the master configuration.

5. Optional: Increase the maximum transaction timeout to prevent administrative processes from failing:
  - a. Navigate to the screen containing the **Maximum transaction timeout** parameter:
    - (WebSphere 6.1) Click **Servers** → **Application servers** → **server1** → **[Container Settings] Container Services** → **Transaction Service**.
    - (WebSphere 7.0) Click **Servers** → **Server Types** → **WebSphere application servers** → **server1** → **[Container Settings] Container Services** → **Transaction Service**.
  - b. Click the **Configuration** tab, and set the **Maximum transaction timeout** parameter value to at least 600 (seconds).
 

**Important:** If the timeout value is not large enough, some administrative processes (such as adding an expansion product) might fail.
  - c. Click **Apply** and then click **Save**.
6. Repeat this procedure as needed for any object store that uses a different database type.

#### Setting the primary administrative user name:

If you are using IBM WebSphere Application Server federated repositories for LDAP authentication, you must ensure that the name you entered for the WebSphere Application Server primary administrative user name is unique across all realms.

#### Setting host aliases for deployment on multiple servers:

If you are deploying Content Engine to multiple IBM WebSphere Application Server servers on the same WebSphere node, you must define the host alias and port numbers.

To set the host alias:

1. Log in to the WebSphere administrative console.
2. Navigate to **Environment** → **Virtual Hosts** → **default host** → **Host Aliases**.
3. If you are using SSL, add an alias for the SSL port number, such as port 9081.
4. Add an alias for the non-SSL port number, such as port 9444.
5. Click **Apply**.

#### Setting permissions for the Configuration Manager user:

You must create an application server account with certain directory permissions that you will use later on to start the Configuration Manager tool.

To set permissions for the Configuration Manager user:

Set permissions for the Configuration Manager user (*config\_mgr\_user*) on the WebSphere Application Server profile directory and all its subdirectories where Content Engine will be deployed:

Option	Description
Windows	Read & Execute, and Write permission

## Configuring WebSphere Application Server for Application Engine or Workplace XT

You must install WebSphere Application Server on the machine where you are going to install and deploy Application Engine or Workplace XT.

Application Engine or Workplace XT can be collocated with Content Engine as long as the server is appropriately sized. However, each instance of the Application Engine or Workplace XT and each instance of the Content Engine must run in its own JVM. For assistance in sizing your system, contact your service representative.

To configure WebSphere Application Server:

1. Verify that the application server is set to use JSESSIONID as the default cookie name. To avoid forcing end users to log in individually to applets such as Process Designer, Search Designer, and Process Simulator, configure the application server to use JSESSIONID as cookie name, and not use application-unique cookie names. Using JSESSIONID is typically the default setting for the supported application servers. Both Application Engine and Workplace XT use cookie names to pass session information between Application Engine or Workplace XT and the client browser.
2. Determine the Initial and Maximum Heap Size. Refer to your application server vendor's recommendation for Initial and Maximum heap size values. You will use this information when you configure WebSphere Application Server after you install Application Engine or Workplace XT. For IBM specific recommendations, see the *IBM FileNet P8 Performance Tuning Guide*.
3. When WebSphere is running as a service and a UNC path is specified in `web.xml` for configuration, upload, and download directories, the account that is specified to run the WebSphere service must have permissions to the share of the UNC path.

## 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](http://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 2. Documentation URLs*

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

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.





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## 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 66*

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

*“IT administrator” on page 69*

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 70*

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 70*

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

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### 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 66*

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.
- The Content Engine locale must match directory server locale to manage non-ASCII user names correctly.
- Support for a Windows non-ASCII 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.

### Content Engine

A single instance of Content Engine on an Oracle server in a Windows environment can support multiple languages by:

- Selecting the Unicode AL32UTF8 database character set when configuring the Oracle database.
- Installing the appropriate Windows language packs.

“Installing Oracle client”

Consider the following language information when installing Oracle Client software.

“UNIX” on page 68

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 68

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.msp>.

### UNIX

For all Process Engine deployments using a remote Oracle database, confirm the following two environment variables in the `fns` 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 `fns` user profile file in `/home/fns`:

```
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. JA16SJIS	Because Shift-JIS is the code page for Windows, The Oracle JA16SJIS character set is the best match.
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 70

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.

### Application Engine or Workplace XT

Application Engine and Workplace XT can be installed:

- In any locale on any of the supported UNIX platforms
- On any localized version of Windows or in any region on the English version of Windows

**Remember:** The Application Engine and Workplace XT setting must match the Process Engine setting when the Process Task Manager is started. Otherwise, workflows can experience unexpected problems such as errors related to the way characters display.

## Content Engine

Content Engine can be installed:

- In any locale on any of the supported UNIX platforms
- On any localized version of Windows or in any region on the English version of Windows

## 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.

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## IBM FileNet P8 administrator

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

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## 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
```





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## Appendix B. IBM FileNet P8 ports

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

### Content Engine ports

Port name	Default number	Notes
LDAP	389	This port is on the directory server, specified on the Content Engine server for authentication.
SSL	636	This port is on the directory server, specified on the Content Engine for authentication through SSL.
LDAP Global Catalog	3268	
WebSphere EJB	2809	This port is on the WebSphere Application Server for Content Engine, for communication with Content Engine by clients through EJB.
WebSphere WSI	9080	This port is on the WebSphere Application Server for Content Engine, for communication with Content Engine by clients through WSI.
Oracle	1521	This port is on the Oracle database server, for communication with the database by Content Engine.

### 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 initfsw running on the same or a different system analogous to COR_Listen listening for RPCs.

Port name	Default number	Notes
COR	32769 (TCP)	Courier service. COR_Listen listens on this port for incoming RPC requests.
NCH	32770 (UDP)	nch is the NCH daemon. 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.
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.

Port name	Default number	Notes
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.
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.

### Autonomy K2 search engine ports

Port name	Default number	Notes
K2 Master Administration Server	9950 (default)	This port is located on the machine that hosts the K2 Master Administration Server machine. It is the software port for K2 Master Administration Server.
K2 Dashboard	9990 (default)	This port is located on the machine that hosts the K2 Master Administration Server. It is used specifically for the URL access for the K2 Dashboard.

Port name	Default number	Notes
K2 Index Server	9960 - 9979 (recommended range)	This port is located on the machine where you created the K2 Index Server service. It is for communication between the K2 Index Server and P8 Content Engine.
K2 Broker Server	9900 - 9909 (recommended range)	This port is located on the machine where you created the K2 Broker Server service. It is for communication between the K2 Broker Server and P8 Content Engine.
K2 Server (Search Server)	9920 - 9949 (recommended range)	This port is located on the machine where you created the K2 Server (Search Server) service. It is for communication between the K2 Server (Search Server) and Content Engine.
K2 Ticket Server	9910 - 9919 (recommended range)	This port is located on the machine where you created the K2 Ticker Server service. It is for communication between the K2 Ticket Server and Content Engine.

## Rendition Engine and Content Engine ports for Liquent

Port name	Default number	Notes
Liquent input port	2867 (COM Repository only)	This port allows for distributed processing of jobs on the Rendition Engine servers when there are more than one Rendition Engine server. A Rendition Engine server or Rendition Engine client (Content Engine Publishing server) on which a job is submitted makes the load balancing decision on where to run the job. If the job is sent to another Rendition Engine server for execution then it uses the other Rendition Engine server's input port to do so.

Port name	Default number	Notes
Liquent notify port	2868	This port is also related to the distributed processing of jobs on the Rendition Engine servers. When a job is sent to another Rendition Engine server then the originating Rendition Engine server or Rendition Engine client (Content Engine Publishing server) is notified on this port by the other Rendition Engine Rendition Engine server when the other Rendition Engine Rendition Engine server has finished processing the job. One case of this is when the Rendition Engine Rendition Engine server is notifying the Rendition Engine client (Content Engine Publishing server) that a conversion job has completed.
Liquent event port	2869	This port is used by each Rendition Engine server to send or receive events. These events are used by the Rendition Engine servers to keep each other informed of current activities. The Rendition Engine or Liquent Domain Manager uses these events for the job status display.
Liquent admin port	2870	This port is used by each Rendition Engine server for internal administrative functions. It's primary use is for each Rendition Engineserver to publish its current activity statistics (for example, how busy the business services are) for use by other Rendition Engine servers to make load balancing decisions.
Liquent file transfer port	2871	This port is used for transferring source, temporary, and result files between Rendition Engine servers as well as between Rendition Engine servers and Rendition Engine clients (Content Engine Publishing servers).

Port name	Default number	Notes
Liquent job queue port	2872	This port is for job queuing by the render business service on all Rendition Engine servers.
Oracle	1521	When the selected Rendition Engine database is Oracle, then this port is used by the Rendition Engine servers and the Rendition Engine clients (Content Engine Publishing server) to access the Rendition Engine database.

**Tip:** If the Liquent port number assigned to the Rendition Engine/Liquent software conflicts with the port number required by another application or service that runs on the Rendition Engine server or the Content Engine Publishing server, then the default values can be changed in the Rendition Engine/Liquent Domain Manager. The above port numbers are the default values set by the Rendition Engine installer for the COM Repository in the Rendition Engine/Liquent domain, which represents the Rendition Engine server itself. When a Content Engine Publishing server is configured to point to the Rendition Engine server, one must create a "Java Repository" in the Rendition Engine/Liquent domain that represents the Content Engine Publishing server as a Java client to the Rendition Engine server, and this repository will also have the same default port number values.

The database port number is not specified directly by the Rendition Engine server's Liquent software, but it is specified in the Rendition Engine client/Content Engine Publishing server's Rendition Engine Connection (for the JDBC connection from the Content Engine Publishing code to the Rendition Engine database server).

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