IBM FileNet P8 Platform

IBM

Version 3.5

Installation and Upgrade Guide

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About this Document

Installation by an IBM FileNet Certified Professional (FCP) recommended. For more information on the FCP program, contact your IBM service representative.

Every effort has been made to provide you with complete installation instructions. If information becomes available after the documentation release from which you accessed this guide, we will provide an updated version of the guide on the Information Management support page (www.ibm.com/software/data/support/). As a general rule, you should refer to the web site to obtain the current version of this guide.

A new version of the guide will be distributed as of the release of any core IBM FileNet P8 Platform component (Content Engine, Process Engine, or Application Engine). Component fix packs are often released independently of one another and can also require updates of the guide. Check the edition number applied to this common guide to determine the product versions covered.

Send your comments by e-mail to comments@us.ibm.com. Be sure to include the name of the product, the version number of the product, and the name and part number of the book (if applicable). If you are commenting on specific text, include the location of the text (for example, a chapter and section title, a table number, a page number, or a help topic title).

NOTES

- This guide provides instructions for installing and/or upgrading the core IBM FileNet P8 Platform components to their current released version. Be aware that each release of an IBM FileNet P8 component or expansion product can have multiple software updates available in the form of service packs, fix packs, and/or interim fixes, each with potentially different dependencies and installation requirements. Therefore, before you attempt to install or upgrade IBM FileNet P8 Platform, review the list of releases and their associated dependencies in the IBM FileNet Compatability Matrix on the Information Management support page (www.ibm.com/software/data/support/). See "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

- If you do not intend to upgrade all IBM FileNet P8 components and expansion products to the most current released version, review the dependencies for the version(s) you intend to install. These dependencies will be contained in a document and location on the IBM Customer Service and Support web site for FileNet customers (equivalent to those noted in the previous bullet).

- This guide assumes that to perform your installations you are using the 4.0.0b update of the generally released Content Engine software, which among other things adds support for JBoss as an application server.

- This guide contains links to the IBM FileNet P8 Platform online help system, where you will find important additional information that can help you make decisions about your installation. The ideal way to use this guide is as an online PDF installed within the help system. To take advantage of these links while using this guide, perform the documentation install tasks () before beginning your full IBM FileNet P8 Platform installation.

Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs

To access documentation for IBM FileNet products

1. Access the Product Documentation for FileNet P8 Platform support page
   (http://www-1.ibm.com/support/docview.wss?rs=3247&uid=swg27010422).

2. Select the appropriate product link.

To access compatibility matrices and fix packs for IBM FileNet products

1. Access the Fix Packs for FileNet P8 Platform support page
   (http://www-1.ibm.com/support/docview.wss?&uid=swg27010146)

2. From the Fix Pack page:

   • To access the compatibility matrix, under FileNet P8 Compatibility Matrices, click **Matrix**.

   • To access the fix pack you need, under a specific product name, click the release number.

Typographical Conventions

This document uses the conventions in the following table to distinguish elements of text.

Convention	Usage
UPPERCASE	Environment variables, status codes, utility names.
Bold	Paths and file names, program names, clickable user-interface elements (such as buttons), and selected terms such as command parameters or environment variables that require emphasis.
Italic	User-supplied variables and new terms introduced in text.
<italic>	User-supplied variables that replace everything between and including the angle bracket delimiters (< and >).
`Monospace`	Code samples, examples, display text, and error messages.

NOTE Some path names in this document that are identical (except for the directory-separator character) on both UNIX® and Windows® platforms are specified in UNIX syntax only (that is, with forward-slash directory separators).

WARNING This document contains examples of text to be typed on a command line. Be sure to manually type the command, rather than copying and pasting it from this document. Otherwise, your command line may contain unrecognized characters and will not execute properly.

Revision Log

The following table identifies changes made to this document since the IBM FileNet P8 3.5.0 release.

Date	Revision
03/09	Updates for documentation defects.
09/08	Updates for documentation defects.
07/08	The topic "Configure and start Application Engine (WebSphere)" on page 213 was updated to add procedures for WebSphere 6.1.
	Added various defect-related updates for accuracy and usability improvements.
	Added new cover page with IBM part numbers.
	The topic "About this Document" on page 8 was updated with information on accessing IBM FileNet updates and documentation on the IBM web site.
08/07 3.5.3	The topics "Install Oracle Server for IBM FileNet P8" on page 63, "Install Oracle Client for IBM FileNet P8" on page 74, and "IBM FileNet P8 Database Character Sets" on page 372 were updated to add information for Oracle 10g.
06/07 3.5.2d	In the topic "Install Oracle Server for IBM FileNet P8" on page 63, a note has been added that NLS_LENGTH_SEMANTICS should not be set at the Oracle system level.
	In the topics "Install Content Engine (Typical)" on page 112 and "Install Content Engine (Custom)" on page 127, a note has been added to the "Deployment and authentication notes" section that explains which users require write access to the temp directory for logging.
	In the Content Engine section of the topic "Gather Pre-upgrade Information" on page 301, provided clarification for the statement about running the Stored Search and Search Template Upgrade Tool for upgrades originating with IBM FileNet P8 2.0.1.

Date	Revision
12/06 3.5.2c	An item in "Installation Planning Considerations" on page 20 has been changed to remove an incorrect statement that Office Application Integration honors Workplace sign-ins.
	In the topic "Install Content Engine (Custom)" on page 127, an incorrect registry name for verifying CFS-IS installation has been corrected.
	In the topic "Install Process Engine (AIX)" on page 179, typographical errors in the file settings and commands have been corrected.
	The topic "Configure Content Engine and SQL Servers for Windows 2003" on page 46 has been updated with a Caution for SP1 and R2 users; they should consult the appendix "Configure an IBM FileNet P8 environment for Windows Server 2003 SP1 or R2" on page 375 instead.
	The topic "Configure the Process Engine LDAP Connection" on page 204 has been updated to include alternative queries for performing partial instead of complete exports.
	The topic "Verify Current Release Level" on page 312 has been changed to clarify what information to use from the Version Tools Technical Notice.
	In the topic "Install Oracle Client for IBM FileNet P8" on page 74, a note has been added that the DBA must change init.ora to allow remote SYS login.

Date	Revision
08/06 (3.5.2b)	The topics that cover documentation installs for all applicable platforms have been changed to include more details for Windows installation of the functional expansion documentation.
	The topics that cover Application Engine uninstall for all applicable platforms have been changed to inform users of the Windows Task Manager shutdown screen in the AE Uninstall wizard.
	The topic "Enable Application Engine to use ISRA" on page 287 has been change to include a Warning against changing the JNDI name variable during an ISRA installation.
	The topic "Configure an IBM FileNet P8 environment for Windows Server 2003 SP1 or R2" on page 375 has been changed to include the R2 release.
	A note about not changing the cookie name has been added to all topics that deal with configuring Application Engine by platform.
	The topic "Set up Application Engine SSL security" on page 253 has been changed to include a step for updating the base URL, as well as a note about using Java^{TM} applets.
	The topic "Install Application Engine" on page 205 and "Deploy multiple Application Engine instances" on page 284 were changed to clarify requirements for deployment of multiple instances of Application Engine on a single application server.
	The topic "Install File Tracker" on page 278 was changed to remove the change option from the uninstall procedure.
	The topics "Create groups and users required for IBM FileNet P8 installation" on page 49 and "Start Process Routers" on page 242 were changed to include the permissions required to start the router.
	The topic "Install Application Engine" on page 205 was changed to include a reference to the Troubleshooting Guide for error and action details.
	The topic "Install File Tracker" on page 278 was changed to clarify the note about installation dependencies on Application Integration.
	The topic "Configure and start Application Engine (JBoss/Tomcat)" on page 223 was changed to correct a line in the jboss-app.xml file example.
	The topic "Installation Planning Considerations" on page 20 has been changed to remove the statement that Content Engine and Process Engine must use the same database.
4/06 (3.5.2a)	The topic "Configure and start Application Engine (JBoss/Tomcat)" on page 223 was modified to update the instructions for disabling JBoss logging.
	The new topic "Install File Tracker" on page 278 was added to provide instructions for installing the optional Workplace File Tracker application.
	Removed or modified several references throughout this guide to *Content Engine Administrators*, as this is no longer a hard-coded group name.

Date	Revision
12/05	The topic "Upgrade Overview" on page 297 was modified to indicate that the Web Content Manager (WCM), Email Manager (Capture), and IBM FileNet P8 Portlets functional expansions have been released for this version of IBM FileNet P8 Platform.
	The topics "Install Process Engine (Solaris)" on page 167 and "Upgrade Process Engine (Unix)" on page 322 were modified regarding the instructions for enabling the anon ports. The maximum tcp_smallest_anon_port has been changed to 32768 to support extensible authentication.
12/05 (3.5.2)	The "Index" on page 391 was enhanced.
11/05 (3.5.1a)	The topic "Install Process Engine (AIX)" on page 179 was modified to reflect support for AIX 5.3.
	The topics Task 7a on page 81 through Task 7f on page 107 were added to provide instructions for installing or (if necessary) performing search-related reindexing of the IBM FileNet P8 Platform documentation on supported application servers.
	The topics "Installation Planning Considerations" on page 20, "Sample Configurations" on page 32, "Install DB2 server for Content Engine and Process Engine" on page 68, and "Install DB2 Client for Content Engine and Process Engine" on page 77 to remove information specific to support for remote DB2 database on AIX only, as support for DB2 on additional platforms is being introduced.
10/05	The topic "Install Microsoft SQL Server for IBM FileNet P8" on page 58 was modified to add information to cover WCM requirements. Also removed the directive to verify Mixed Mode authentication, because Mixed Mode is not a requirement in all cases. Rules for choosing authentication mode were moved to the actual step, from the notes at the start of the task.
	The topic "Install MS SQL Server Client software for IBM FileNet P8" on page 72 was updated to remove duplicate directives to test the connection to the remote SQL Server database.
	The topic "Configure the Process Engine LDAP Connection" on page 204 was modified to remove information saying fnsw and fnadmin are automatically created by Process Engine installer on UNIX platforms. Also added a note that the User and Group Base value must match what was specified as the DefaultRealm during installation and configuration of Content Engine.
	The topic "Start the Pooled Process Manager (PPM)" on page 203 was updated to reflect the need to logon on as a member of the fnadmin group before trying to start the Task Manager.
	The topic "Create groups and users required for IBM FileNet P8 installation" on page 49 was updated to include DB2 users and groups.
	The topic "Initialize the isolated region" on page 244 was modified to call for starting a supported browser rather than specifying Internet Explorer only.

Date	Revision
09/23/05 (3.5.1)	Added references to instructions for installing the 3.5.*x* Service Pack, which are located in separate platform-specific readmes on the component Service Pack media: Content Engine Service Pack CD, Process Engine Service Pack CD, Application Engine Service Pack CD, and Rendition Engine Service Pack CD.
	Installation and Upgrade procedures for Rendition Engine have been relocated to a separate guide: FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.
	The topic "Deploy multiple Application Engine instances" on page 284 was added to define the procedure for deploying multiple instances of Workplace on a single Application Engine server.
	The topic "Install Process Engine (HP-UX)" on page 191 was modified to provide new information on time zone settings for Site and User.
	The topic "Configure and start Application Engine (Sun Java Application Server)" on page 231 was modified to include instructions on how to configure classloader settings. In addition, the required code change in the server.policy file was updated.
	The topic "IBM FileNet P8 Port Numbers" on page 364 was modified to include the port number used by Process Engine for Extensible Authentication communications.
	The appendix topic "Configure an IBM FileNet P8 environment for Windows Server 2003 SP1 or R2" on page 375 was added to address installation and configuration requirements when running the IBM FileNet P8 Platform on Windows 2003 Service Pack 1.
09/01/05 (3.5.0c)	The topic "Installation Planning Considerations" on page 20 was modified to provide a link to the IBM FileNet P8 Platform Performance Tuning Guide.
	The topics "Install Process Engine (AIX)" on page 179, "Install Process Engine (HP-UX)" on page 191, and "Install Process Engine (Solaris)" on page 167 were modified to clarify how to set and verify HP, AIX, and Solaris environment variables during Process Engine installation
	The topic "Upgrade Planning Considerations" on page 297 was modified to address the need to delete and re-create Verity indexes after upgrading Content Engine to IBM FileNet P8 3.0.0.
08/12/05 (3.5.0b)	The topic "Installation Planning Considerations" on page 20 was modified to indicate that you must install Process Engine on Windows 2003 before installing SP1 and there is no longer any restriction regarding installing CFS-IS on Windows 2003 only.
	The topic "Install FileNet P8 Platform documentation" on page 57 was modified to include information regarding reindexing multiple expansions.
	The topic "Configure the Content Engine environment" on page 145 was modified to indicate that file store permissions for Apache should be at the share level, not the folder level.
	Beginning with the topic "Install Process Engine (Windows)" on page 155, the Process Engine installation topics were modified to update the installation directory information to match the actual media layout location of setup.

Date	Revision
	The Application Engine installation topics were restructured beginning with the topic "Install Application Engine" on page 205. In addition, this topic was modified to improve the Solaris installation instructions, including an updated path to the Solaris installer files: **/cdrom/p8ae35sol/**.
	A new topic "Configure and start Application Engine (Oracle Application Server)" on page 228 was added to discuss support for the Oracle Application Server.
	A new topic "Configure and start Application Engine (Sun Java Application Server)" on page 231 was introduced to outline support for the Sun Java^{TM} Application Server.
	The topic "Set up Application Engine SSL security" on page 253 was modified regarding use of the UTCryptoKeyFile.properties file.
	A new topic "Remove the IBM FileNet P8 Platform documentation" on page 347 was added to provide instructions for removing the installation of the IBM FileNet P8 Platform documentation.
	The topic "Upgrade Content Engine" on page 315 was modified to provide a manual workaround for upgrading the GCD from IBM FileNet P8 version 3.0.0 to 3.5.0.
	The upgrade procedure steps in the topic "Upgrade Application Engine" on page 328 were modified to indicate that you must restart AE if you modify the web.xml and actions.xml files.
	The Application Engine port numbers in the topic "IBM FileNet P8 Port Numbers" on page 364 were updated.
06/10/05 (3.5.0a)	The topic "Installation Planning Considerations" on page 20 was modified to remove the restriction against installing CFS-IS on Windows Server 2003 from a network drive.
	The topic "Database Considerations" on page 29 was modified to include information related to collocation of a Rendition Engine database with Content Engine and Process Engine databases.
	The topics "Install Oracle Server for IBM FileNet P8" on page 63 and "Install Oracle Client for IBM FileNet P8" on page 74 were modified with updated Rendition Engine database requirements, as well as to indicate that IBM FileNet P8 supports the Oracle Advanced Security functionality of secure data transfer across network protocol boundaries for Content Engine (tested) and Process Engine (untested).
	The topic "Install Oracle Server for IBM FileNet P8" on page 63 was modified to indicate that the Transaction Processing database type is not required for Process Engine when creating an Oracle database. In addition, Oracle Windows Interfaces is required for Oracle Client installations only on Windows machines that access CE-dedicated Oracle databases.
	The topics "Install Content Engine (Typical)" on page 112 and "Install Content Engine (Custom)" on page 127 were modified to indicate that the path to the CE installation logs is a default path.

Date	Revision
	The topic "Configure the Content Engine environment" on page 145 was modified to indicate that Content Engine cannot access a DB2 database if IBM DB2 Universal Database Version 8.2 FixPak 2 (equivalent to IBM DB2 Universal Database Version 8.1 FixPak 9) is installed.
	The topic "Create an object store and verify the Content Engine installation" on page 147 was modified due to the fact that installing Content Engine on a Windows domain controller is not supported. In addition, changes were also made regarding possible consequences of not having File Store Service on a machine where a remote file store is installed.
	The topic "Install Process Engine (Windows)" on page 155 was modified to reflect the need for a non-numeric character as the first character in the f_maint password.
	The topic "Perform additional configuration tasks" on page 256 was modified to include information regarding CFS-IS configuration tasks.
	The topic "Install standalone IBM FileNet Enterprise Manager system" on page 263 was modified to indicate that Terminal Services must not be installed on a machine where Process Engine is installed, as well as to document the Custom Setup screen in the Content Engine Setup wizard.
	The topic "Configure remote Content Engine file stores" on page 267 was modified to indicate that file stores are allowed on DFS as well as NTFS file systems.
	The topic "Upgrade Content Engine" on page 315 was modified to include a step to copy a Windows registry key so that the Process Engine Router will be re-created, to include a step to stop the Apache services monitor, and to provide a warning to ensure that all transactions have been processed before starting Content Engine upgrade.

Installation Planning and Procedures

This installation section contains the following major topics:

- "Plan the Installation" on page 19
- "Prerequisite Tasks" on page 36
- "Installation Tasks" on page 80
- "Configuration/Startup Tasks" on page 237
- "Optional Installation Tasks" on page 258

Plan the Installation

Before you begin to install the IBM FileNet P8 Platform:

- Retrieve updates to IBM FileNet P8 documentation and software from the IBM support page, see "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

- Review the "Installation Planning Considerations" on page 20 for a list of auxiliary documentation you should gather and a list of tasks you should perform before installing IBM FileNet P8 Platform software.

- Review the "Sample Configurations" on page 32.

- Read "Prerequisite Tasks" on page 36, "Installation Tasks" on page 80, "Configuration/Startup Tasks" on page 237, and "Optional Installation Tasks" on page 258 to become familiar with the tasks you will perform when setting up your IBM FileNet P8 Platform software.

NOTE IBM recommends you follow the planning, installation, and configuration tasks in the order presented in these topics. If you do otherwise, or you install IBM FileNet P8 components on machines containing components for existing IBM FileNet P8 systems, you may encounter unforeseen problems or be required to perform additional setup steps. See the IBM FileNet P8 Platform Troubleshooting Guide on the IBM support page for details. See "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

Installation Planning Considerations

This section lists details that will help you prepare your environment for the installation of an IBM FileNet P8 system. In many cases, the items you see listed will be links to more detailed information, which will help you plan a system rollout. Please review this information thoroughly before you start to set up IBM FileNet P8 components or required third-party software.

General Requirements for all IBM FileNet P8 Systems

Whether you are installing IBM FileNet P8 Platform for the first time or upgrading from the 3.0.0 release, IBM FileNet P8 3.5.0 must first be installed and configured before applying the 3.5.*x* Service Pack. Follow the installation or upgrade tasks provided in this manual to either install a new 3.5.0 system, or upgrade an existing 3.0.0 system to 3.5.0. After your system is succesfully running 3.5.0, follow the procedures in "Apply Service Packs and patches for core components" on page 334 to apply the 3.5.*x* Service Packs.

- **Gather auxiliary documentation.**

  NOTE To download this and other IBM FileNet product documentation from the IBM web site, see "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

  – *IBM FileNet P8 Hardware and Software Requirements*. This document provides details for all FileNet P8 system components, as well as the minimum supported levels of third-party software components. The information throughout the *FileNet P8 Platform Installation and Upgrade Guide* assumes you have met all applicable requirements listed in that document.

  – FileNet P8 Platform user and group security help found at: **FileNet P8 Administration > Enterprise-wide Administration > Security > Users and groups**. This help topic provides a complete list of the user and group roles, accounts, and responsibilities required to install, configure, and maintain a FileNet P8 system.

  – *IBM FileNet P8 Platform Security Questionnaire*. This document provides a list of security-related questions that, when answered by your site, can provide valuable feedback to the FileNet Upgrade/Installation Assurance Team that will be helping you install and deploy your FileNet P8 system.

  – *IBM FileNet P8 Platform Release Notes*. This document provides details on new features, known issues, and resolved problems.

  – FileNet P8 Platform Shutdown and Startup help found at: FileNet P8 Administration > Enterprise-wide Administration > Shutdown and Startup. This help topic describes how to shut down and restart FileNet P8 Platform components and some functional expansions. Manual, command line, and some sample batch file procedures are provided.

  – *Installing IBM FileNet P8 Platform in a Non-English Environment Technical Notice*. This document will help you set up the product if your environment is not English-language based.

  – *IBM FileNet P8 Platform High Availability Technical Notice*. This document provides details on how to set up your FileNet P8 system using clusters, farms, and other high-availability software and hardware. In so doing, the document also provides related disaster recovery information.

  – *IBM FileNet P8 Platform Deployment Guide*. This document provides details on how to deploy a FileNet P8 system from a staging environment into a full production environment.

  – *FileNet P8 Platform Troubleshooting Guide.* This document provides troubleshooting information on all aspects of the product.

- *IBM FileNet P8 Platform Performance Tuning Guide.* This document provides performance tuning information on all aspects of the product.

- *IBM FileNet P8 Silent Installation Guide.* This document provides details on how to do unattended installations of your FileNet P8 system.

- *IBM FileNet P8 Platform Extensible Authentication Guide.* This document provides instructions for supporting single sign-on (SSO) products from leading vendors including IBM, Netegrity, Oblix, RSA and others. The APIs enable FileNet partners and third-party developers to develop and support solutions for a broad range of SSO products.

- *IBM FileNet P8 Rendition Engine Installation and Upgrade Guide.* This document provides details on how to install and upgrade Rendition Engine and Publishing Plug-in components.

- For all optional components, see the IBM FileNet P8 3.5 version of the appropriate documentation, including: *IBM FileNet P8 Content Federation Services for Image Services Guidelines, IBM FileNet P8 Process Analyzer Installation and Upgrade Guide,* and *IBM FileNet P8 Process Simulator Installation and Upgrade Guide.*

- **Consider the JavaTM requirements for the IBM FileNet P8 Documentation server**. To enable the help Search functionality, you must install the IBM FileNet P8 Documentation from its CD onto a Java-enabled application server (for example, any Java 2 Platform Enterprise Edition [J2EE] web application server supported by Application Engine).

Operating System Considerations

General

- **Ensure hosts file contents.** On each Windows-based FileNet P8 server, the Windows hosts file must contain the Windows server name and Internet Protocol (IP) address of all servers it will communicate with, including the remote database server, if applicable. The location of the hosts file depends on where the Windows software is installed. For Windows 2000, the file is in **\winnt\system32\drivers\etc**. For Windows 2003, the file is in **\WINDOWS\system32\drivers\etc**.

  On each UNIX-based FileNet P8 server that does not use DNS (Domain Name Service) or NIS (Network Information Service), the **/etc/hosts** file must contain the name and Internet Protocol (IP) address of all servers it will communicate with, including the remote database server, if applicable.

Content Engine

Windows 2003

- **Configure Microsoft® Distributed Transaction Coordinator (MSDTC) and COM+.** To create object stores, you must manually configure MSDTC and COM+ on all servers running Content Engine and Microsoft SQL Server software. FileNet developed Content Engine using Microsoft COM+ technology. When a COM+ application requires a transaction to span multiple computers, using MSDTC makes the application more reliable by offering a unified mechanism. Content Engine, therefore, uses MSDTC to accomplish distributed transactions to achieve consistency, reliability and scalability. Refer to Windows Online Help on MSDTC and COM+, or refer to "Configure Content Engine and SQL Servers for Windows 2003" on page 46.

- Enable Microsoft Internet Information Services (IIS). If you plan to use the Content Engine WebDAV Provider, you must ensure that Microsoft Internet Information Services (IIS) software is enabled on all Content Engine servers. IIS is enabled by default when you install Windows 2000, but you must manually enable this service under Windows 2003.

Firewall

- **Ensure port availability.** If you intend to move Content Engine into a DMZ outside your firewall, you need to open port 135 (used by DOM, RPC, DTC, etc.) for communication *before* starting the IBM FileNet P8 installation.

Process Engine

AIX

- **Ensure minimum /tmp size.** The **/tmp** directory must have 100MB free.

- **Set Kernel.** The Kernel must be set to 64-bit mode.

- **Ensure minimum swap space.** The swap space must be set to 1.5 - 2 times RAM.

- **Set *Maximum Number of Processes allowed per user.*** The *Maximum Number of Processes allowed per user* must be set to at least 400.

- **Set *Maximum Kbytes of real memory allowed for MBUFS*.** The *Maximum Kbytes of real memory allowed for MBUFS* must be set to 0. Setting the MBUFS parameter to 0 causes the system to use the default amount of available memory. This default amount is approximately 1/8 to 1/4 the amount of real memory.

- **Set *Maximum Number of FIXED licenses (Num)*.** The *Maximum Number of FIXED licenses (Num)* must be set to a minimum of16.

- **Install required filesets.** The following filesets must be installed and committed:
  – bos.adt.libm
  – bos.adt.lib
  – bos.adt.base
  – bos.perf.perfstat
  – bos.perf.libperfstat
  – bos.adt.debug

- **Save existing .profile and .cshrc files.** Prior to installing the Process Engine software, save the .profile and .cshrc files for the following users if they exist on the server:
  – root
  – oracle
  – fnsw

  Because Process Engine Setup modifies these files, saving them ahead of time will give you the option of restoring any customization that was in place prior to Process Engine installation.

HP-UX

- **Ensure minimum /tmp size.** The **/tmp** directory must have 100MB free.

- **Ensure minimum physical memory.** The physical memory must be at least 512 MB.

- **Set Kernel.** The Kernel must be set to 64-bit mode. See the topic for a complete list of minimum Kernel values.

NOTE If you will be installing the 8.2 version of DB2 Client software, pay particular attention to the shmmax parameter. The minimum value documented for Process Engine may not be high enough to allow successful installation of the DB2 software. See the appropriate vendor documentation for the 8.2 release for recommended kernel parameter settings.

- **Ensure minimum swap space.** The swap space must be set as follows:

  – Two times RAM if RAM < 1GB

  – 1.5 times RAM if RAM >= 1GB

- **Save existing .profile and .cshrc files.** Prior to installing the Process Engine software, save the .profile and .cshrc files for the following users if they exist on the server:

  – root

  – oracle

  – fnsw

  Because Process Engine Setup modifies these files, saving them ahead of time will give you the option of restoring any customization that was in place prior to Process Engine installation.

Solaris

- **Ensure minimum /tmp size.** The **/tmp** directory must have 100MB free.

- **Set Kernel.** See the topic "Install Process Engine (Solaris)" on page 167 for a complete list of minimum Kernel values.

- **Save existing .profile and .cshrc files.** Prior to installing the Process Engine software, save the .profile and .cshrc files for the following users if they exist on the server:

  – root

  – oracle

  – fnsw

  Because Process Engine Setup modifies these files, saving them ahead of time will give you the option of restoring any customization that was in place prior to Process Engine installation.

Windows 2000 and Windows 2003

- **Ensure NTFS.** Windows must be configured with NTFS.

- **Install Process Engine before installing Windows Server 2003 Service Pack 1.** If you will be installing SP1 for Windows 2003 server, you must install Process Engine 3.5.0 before installing the Microsoft service pack.

Application Engine

- **Ensure Linux® libraries.** To install Application Engine, several legacy libraries are required. Add the compat-libstdc++-7.3-2.96.122.i386.RPM located on Disc 3 of the Red Hat AS 3.0 install media to your installation.

Network Considerations

- **Ensure static IP addresses.** 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 IBM FileNet Enterprise Manager clients.

- **Ensure availability of required port numbers.** Several port numbers are required by the various IBM FileNet P8 components. For a composite list, see "IBM FileNet P8 Port Numbers" on page 364.

Windows Domain Considerations

General

- **Consider including all Windows-based IBM FileNet P8 servers in the Windows domain.** In this regard:

  – For a list of the components you can install only in a Windows domain, see the following topic "Content Engine" on page 24.

  – For all other IBM FileNet P8 components on Windows servers, IBM recommends installation in the same Windows domain as Content Engine and Rendition Engine, if only to centralize your administrative tasks in the Active Directory environment. The associated primary DNS server address on each machine must point to the same DNS server as Content Engine and Rendition Engine. For more installation considerations related to Rendition Engine, see FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

  – You can use a single IBM FileNet Enterprise Manager instance to administer multiple object stores as long as they are in a single FileNet P8 domain (i.e., a "deployment" domain). You can do this by setting up Terminal Server (with Enterprise Manager installed) on a machine in the FileNet P8 domain and running Enterprise Manager remotely, via Terminal Server Client, on a single machine. Do not install Terminal Services on any Process Engine machine.

- **Be aware that IBM FileNet P8 3.5.*x* does not support multi-forest configurations.**

Content Engine

- **Ensure a Windows domain exists.** You must have at least one Windows domain configured for your IBM FileNet P8 environment, regardless of your authentication provider (Windows Active Directory, Sun Java System Directory Server, or Novell eDirectory).

- **Ensure you have a Windows domain controller.** If you have not done so already, run dcpromo on a designated Windows domain server to create and configure the Windows domain controller. The domain controller machine must have the following characteristics:

  – Installed in Windows domain used for IBM FileNet P8 software.

  – Configured as NTFS.

  – Have a static IP address.

  – Have the Content Engine *primary* DNS Server component installed and configured properly, including DNS forwarders if required (e.g., if the Primary DNS server, which is typically the domain controller, does not have all IP address information for all IBM FileNet P8 servers). In this regard, the Content Engine's primary DNS TCP/IP setting must be the IP address of the DNS server having IP information (in forward and reverse look-up zones) for all Content Engine servers, domain controllers in the Active Directory forest, and all Application Engine and Process Engine servers that may not be in the forest (i.e., those on UNIX servers).

In IBM FileNet P8 production systems, be aware that if you install Content Engine on the domain controller machine, authentication/authorization performance may degrade if your authentication provider is Windows Active Directory.

- **Be aware of the need to create a P8Apache user account.** Apache requires the creation of a specific user account for Apache-based actions in applications such as IBM FileNet P8. See "Create groups and users required for IBM FileNet P8 installation" on page 49 for details.

- **Determine what to install in the Windows domain.** You must install the following software only on machines that are in the Windows domain:

  – Content Engine (all components and services)

    NOTES

    - Before installing Content Engine on a machine, you must add the machine to the Windows domain.

    - A standalone Process Engine server does not necessarily have to be a member of a Windows domain. By contrast, a server containing both Process Engine and Content Engine components must be a member of a Windows domain.

  – IBM FileNet Enterprise Manager

  – Microsoft SQL Server

    NOTE This SQL Server requirement applies only if you are using *Windows* authentication to the database. If instead you are using *SQL Server* authentication, you can install the database engine outside the Windows domain, or in a different Windows domain or forest.

  – Rendition Engine (rendition servers and plug-ins)

- **Be aware that you cannot rename Content Engine servers.** Name your servers carefully. Once you install a Content Engine server component onto a server (Object Store Service, File Store Service, or Content Cache Service) and begin using your IBM FileNet P8 system, you cannot rename the server.

Security Authentication Considerations

General

- **Extensible Authentication**. IBM FileNet P8 3.5.1 Service Pack includes an API framework that provides the ability to configure Content Engine and Process Engine to redirect authentication requests to an external logon module that integrates with single sign-on (SSO) products from leading vendors including IBM, Netegrity, Oblix, RSA and others. The APIs will enable IBM FileNet partners and third-party developers to develop and support solutions for a broad range of SSO products. For complete instructions on configuring extensible authentication support for CE and PE, see *IBM FileNet P8 Platform Extensible Authentication Guide* on the IBM FileNet P8 Platform documentation server at FileNet P8 Documentation > FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > FileNet P8 Platform Extensible Authentication Guide.

- **Ensure you have a supported LDAP authentication provider.** You must have one of the following directory services in place for authenticating your FileNet P8 users and groups:

  – Microsoft Windows Active Directory

  – Novell eDirectory

  – Sun Java System Directory Server (formerly known as Sun ONE Directory Server)

NOTE You must have Microsoft Windows Active Directory for use by Content Engine, even if Active Directory is not your directory service provider for Content Engine or any other IBM FileNet P8 components.

- **Check required user and group account privileges.** For purposes of installing, configuring, and running the services for an IBM FileNet P8 system, you must use several user and group accounts with particular access privileges. For example:

  – In some cases, you must use accounts that IBM FileNet software expects (e.g., the four-character fnsw local-machine user account that you must allow the Process Engine setup program to create).

  – In other cases, you can either use the default user and group names presented by the IBM FileNet P8 setup programs (e.g., Content Engine's FNCE_<*machinename*> user account), or you can specify comparable accounts you want to use instead, based on your existing security policies and directory service accounts.

  For a complete list of these required accounts and privileges, and the system-generated default names, see the help topic FileNet P8 Documentation > FileNet P8 Administration > Enterprise-wide Administration > Security > Users and groups.

- **Be aware that logons to IBM FileNet P8 applications cannot share user credentials.** The fact that you log on to IBM FileNet Enterprise Manager does not allow you to access Workplace without signing in. Note that some functional expansion add-ons that are Workplace integrated will support Workplace user tokens, and thus will not require a user to perform another sign-in to access Workplace functionality from the functional expansion application.

- **For Content Engine**, note the following:

  – When you first run the Content Engine setup program in a Windows domain, you create a new FileNet P8 domain—an administrative entity, separate from a Windows domain, to manage Content Engine services. For each subsequent execution of the Content Engine setup program on a machine in the Windows domain, you can either join an existing FIleNet P8 domain or create another FileNet P8 domain.

  – The Content Engine setup program requires at least one Windows domain user per FileNet P8 domain to run Content Engine services and COM+ application. You can use the same user for all your servers in the domain, or you can have a unique user per Content Engine server. You may create that user yourself or allow the setup program to automatically create a default FNCE_<*machinename*> user and Content Engine Servers group. Any user account you create or designate, including the designated user for the WebDAV extension authentication to IIS, must be a member of the Active Directory domain in which Content Engine has been deployed.

  – The Content Engine setup program prompts for the selection of at least one Lightweight Directory Access Protocol (LDAP) user/group account to be assigned administrative access to the Content Engine's Global Configuration Data (GCD) and in turn the FileNet P8 domain. Thus, before you start to install Content Engine, you must create the initial user and group you want assigned Administrative access to the GCD. Alternatively, you can designate an existing Windows group account. Once the installation is complete, the users and groups assigned Administrative access to the GCD are displayed and modifiable from the Security page of the Enterprise Manager Root Domain property sheet.

  – If you are using Windows Active Directory for authentication, distribution groups are not supported when assigning rights for Object Store Administrators and Object Store Users. This is because Windows allows only security groups to be listed in Access Control Lists (ACLs) and does not allow distribution groups to be used for security purposes.

- **For Process Engine**, note the following:

    – The Process Engine server does not have to be joined to the Windows domain. It can remain stand-alone.

    – When installing Process Engine, you must log on as the Administrator to the local machine. If the machine is joined to a domain, log on to the local machine and not the Windows domain.

- **For Application Engine**, note the following:

    – At a minimum, the user who is installing Application Engine needs to fulfill the following:

        - On UNIX systems, the user needs to have *write* access to the **/bin** directory and *read*, *write*, and *execute* access to the directory where you plan to install Application Engine.

        - On Windows systems, the user has to be a member of the local Administrators group or a user with equivalent permissions.

Microsoft Windows Active Directory

- **Determine global setting requirements.** For a complete list of global settings for this directory service, see the online help topic FileNet P8 Documentation > FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Windows Active Directory.

- **Be aware of the following user restrictions:**

    NOTE See "Configure for Windows Authentication" on page 38 for details on related Microsoft Windows Active Directory restrictions and requirements.

    – **Ensure that all users have Read access on the directory service.** Note that this is likely the default setting. Access control settings in IBM FileNet P8 require that all users have Read access on the directory service. If you do not want to set Read access at the individual user level, you can establish this configuration by (1) setting up Anonymous Access privileges or (2) adding all users to an Authenticated Users group having Read access.

    – **Be aware of restrictions on using domain local groups.** In mixed mode environments, domain local groups are not supported for securing IBM FileNet P8 objects unless Content Engine is installed on a domain controller, in which case authentication/authorization performance may degrade if your authentication provider is Windows Active Directory. In native mode, domain local groups are scoped to the domain where they were created. As such, a domain local group can be used to secure an IBM FileNet P8 object only if is created in the same Windows domain where IBM FileNet P8 is installed.

Novell eDirectory

- **Determine global setting requirements.** For a complete list of global settings for this directory service, see the online help topic FileNet P8 Documentation > FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Novell eDirectory.

- **Be aware of the following user restrictions:**

    NOTE See "Configure Authentication under Novell eDirectory" on page 44 for details on related Novell eDirectory restrictions and requirements.

    – **IBM FileNet P8 does not support global referrals.** This restriction is in place because Novell eDirectory does not provide a referral error to chase for LDAP binds.

    – **Ensure that all users have Browse access on the directory service.** Access control settings in IBM FileNet P8 require that all users have Browse access on the directory service. If you do not

want to set Browse access at the individual user level, IBM recommends you establish a Public trustee for the realm.

– **Be aware that IBM FileNet P8 supports cross-realm group memberships.** This feature means that IBM FileNet P8 supports a configuration in which groups are in one realm while some or all of its users are in another.

Sun Java System Directory Server

• **Determine global setting requirements.** For a complete list of global settings for this directory service, see the online help topic FileNet P8 Documentation > FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Sun Java System Directory Server.

• **Be aware of the following user restrictions:**

 NOTE See "Configure Authentication under Sun Java System Directory Server" on page 40 for details on related Sun Java System Directory Server restrictions and requirements.

– **Ensure that all users have Read access on the directory service.** Access control settings in IBM FileNet P8 require that all users have Read access on the directory service. If you do not want to set Read access at the individual user level, you can establish this configuration by (1) setting up Anonymous Access privileges or (2) adding all users to an Authenticated Users group having Read access. To support referrals and chaining, you will need to set up Anonymous Access.

• **Ensure the following configuration settings:**

– If one-way SSL is enabled, make sure that the Fully Qualified domain name of the Sun Java System Directory Server was used to request the certificate.

• **Be aware of the following user restrictions:**

– If multiple users within a realm have the same UID value, these users cannot log on via IBM FileNet P8 application sign in screens using their short name (uid). They must use their fully qualified distinguished name.

 For example, consider two separate users in two different Organizational Units (OUs).

 uid=jdoe,ou=Sales,dc=filenet,dc=com

 uid=jdoe,ou=Marketing,dc=filenet,dc=com

 In this case neither user can log on with the short name (uid) of jdoe. Each user must use his fully qualified name. For example, jdoe in Marketing must enter all of the information necessary to create the fully qualified name uid=jdoe,ou=Marketing,dc=filenet,dc=com. (If a custom logon application is used, some of this information can be defaulted or hidden from the user.)

– Users cannot have a blank password. If a user has a blank password, an error displays when trying to log on (e.g., to Workplace or Enterprise Manager) or when trying to configure the Process Engine LDAP connection.

– User authentication expects either UID or CN as the primary attribute in a user DN. For example:

– uid=jdoe,ou=Engineering,dc=filenet,dc=com, or cn=john doe,ou=Engineering,dc=filenet,dc=com

– Be aware that FileNet P8 does not support Dynamic Groups. See FileNet P8 Documentation > FileNet P8 Administration > Security > Enterprise-wide Administration > Directory integration and authentication > Sun Java System Directory Server for related details and restrictions.

Database Considerations

All platforms

- **Determine your local vs. remote database engine preference.** The database engine is *local* if it is installed on a server where you will also be installing Content Engine, Process Engine and/or Rendition Engine software. The database is *remote* if it is on a server where no Content Engine, Process Engine or Rendition Engine software is installed. The choice is yours with the exception of DB2, which must be remote from both Content Engine and Process Engine. An Oracle database must also be remote if it is installed on a Linux server.

- Determine what type(s) of database engine you want to use. IBM FileNet P8 components requiring databases support MS SQL Server, Oracle and DB2.

- **Determine your NLS and character-set requirements.** See "IBM FileNet P8 Database Character Sets" on page 372 for information.

Microsoft SQL Server

- **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 database engine. The Process Analyzer functional expansion must have its own database engine.

  - Content Engine, Process Engine, and Rendition Engine components can share an MS SQL Server instance or they can each have a dedicated instance. You can use the default instance or a named instance of your choosing.

  - Content Engine, Process Engine, and Rendition Engine must each have their own databases.

  - Each Process Engine server must have a dedicated instance and database.

  - An MS SQL Server database name cannot have a numeric value as the first character.

- **Verify that a SQL Login exists for Rendition Engine purposes**. For detailed information regarding the SQL Login and installation of Rendition Engine, see FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

- **Verify that a SQL Login exists for Content Engine purposes.** Under MS SQL Server, you must ensure that a SQL Login account exists before you create your first Content Engine object store. For this purpose, you can create a specific user with access only to the object store database. Initially that user must have the create-database privilege. For Windows-integrated authentication, create the SQL Login so that it is associated with the Windows group used during Content Engine installation (e.g., **Content Engine Servers** group or its equivalent). If you are using SQL Authentication instead, you can use any database user. In either case, you must grant the account the following roles:

  - System Administrators

  - Security Administrators

  - Database Creators

  NOTE For Process Engine, the setup program creates the required PE database users.

Oracle

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 (i.e., 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-FileNet applications.

  – Each Process Engine server must have a dedicated instance and database.

  – Content Engine, Process Engine, and Rendition Engine must each have their own tablespaces.

  NOTE For detailed information regarding installation of Rendition Engine, see FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

- **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 Enterprise Manager are locally managed by default.)

- **Be aware of database client software requirements.** For both Content Engine and Process Engine, if the database is remote, you must install database client software on the Content Engine and Process Engine server.

Content Engine

- **Microsoft Transaction Server (MTS) requirements.** If Microsoft Transaction Server is not already installed, then:

  – The Oracle Universal Installer will prompt you to install MTS after the database engine installation completes.

  – On any machine where you will run Content Engine software against Oracle, you must install Oracle Services for Microsoft Transaction Server (Oracle MTS Recovery Service) as part of the Oracle Client installation.

Process Engine

- **Oracle sys password required.** Under Oracle, the Process Engine Setup program prompts for the Oracle *sys* password near the beginning and the end of the installation. The password is required to run various SQL scripts that:

  – Create an Oracle database account for FileNet P8 use.

  – Create a number of stored procedures.

  – Grant access levels to the default tablespace and temporary tablespace specified earlier in Process Engine Setup.

  Process Engine Setup will complete only if all these scripts run successfully. See "Process Engine SQL Scripts (Oracle databases only)" on page 369 for details about these scripts.

DB2

General

- **DB2 server must be remote.** The DB2 database server must be remote from both Content Engine and Process Engine. See the *IBM FileNet P8 Hardware and Software Requirements* document for specifics on supported operating systems.

- **DB2 server instances must be 64-bit.** Instances created on the remote database server must be 64-bit.

- **DB2 client instances must be 32-bit.** Instances created on the Process Engine and Content Engine servers must be 32-bit.

- **Determine whether you want to use a dedicated or shared database.** In this regard:

    – Content Engine and Process Engine can share a database engine, or they can each have a dedicated (i.e., unique) database engine.

    – Content Engine and Process Engine can each have a dedicated DB2 instance, or they can share an instance with one another or with non-FileNet applications.

    – Each Process Engine server must have a dedicated instance and database.

    – Each Content Engine and Process Engine must have their own databases and tablespaces.

- **Plan to use DMS for tablespaces.** For performance reasons, IBM recommends that you create database managed user and user temp tablespaces rather than system managed tablespaces for Process Engine and Content Engine.

- **Be aware of database client software requirements.** For both Content Engine and Process Engine, if the database is remote, you must install database client software on the Content Engine and Process Engine server.

- **Use DB2 default collation**. For both Content Engine and Process Engine, use the default collation setting.

- **Predefine several operating system users and groups**. For Process Engine, an instance owner and fenced user, and groups must be created. Process Engine also requires two specific users be created, named f_sw and f_maint.For Content Engine, there are no specific users or groups to be created, but an operating system user must be identified for access to the Content Engine database. This could be an existing user. Database permissions will need to be granted to this user. See "Install DB2 server for Content Engine and Process Engine" on page 68 for details.

- **IBM recommends SERVER authentication.** SERVER_ENCRYPT and CLIENT authentication are also supported.

- **Be aware of recommended pagesizes.** IBM recommends 8KB minimum pagesizes for Process Engine databases and requires 32KB minimum pagesizes for Content Engine databases.

Sample Configurations

This topic shows you some simple examples of how to distribute IBM FileNet P8 Platform components across a variety of machines. Each example represents a minimum recommended configuration. The configurations include the major IBM FileNet P8 Platform components, both those that are core required components and those that are functional expansion add-ons.

This topic includes the following sample configurations:

- "Baseline Configuration" on page 32

- "Baseline Configuration With Optional Components" on page 33

- "Developer Configuration" on page 34

- "Demo Configuration" on page 34

In all the sample configurations, note that:

- None of the samples shows a database engine, but at least one is required. You can collocate either Microsoft SQL Server or Oracle database engines with IBM FileNet P8 Platform components on any of the servers shown, or you can install them on separate database servers. A DB2 database engine must be remote from Content and Process Engines. An Oracle database engine running on a Linux machine must be remote from all IBM FileNet P8 components.

- None of the samples shows the required MS Windows Active Directory domain controller. You can use Active Directory as your authentication provider or, optionally, use another LDAP directory/ authentication service. You can collocate other IBM FileNet P8 components with the domain controller and/or with whatever LDAP service you use.

- You can scale out the components, but the following graphics do not attempt to show this.

- To administer Application Engine, you can run IBM FileNet P8 Workplace clients either from the computers shown or from one or more browser clients.

- You can also run Workplace as a user client to create and access stored content and processes. Optionally, you can configure these clients to integrate with Microsoft Outlook and Office applications, or to work in conjunction with IBM FileNet eForms, IBM FileNet Web Content Manager (WCM), IBM FileNet P8 Portlets (e.g., for BEA WebLogic or IBM WebSphere), or IBM FileNet Records Manager, as they come available on a given release. You can also use WebDAV clients.

- If you want to apply business rules to Process Designer workflows, you can install the optional ILOG JRules which is not shown in the samples.

- Optional components not shown in the samples include: Records Manager, IBM FileNet P8 Portlets, Web Content Manager, Team Collaboration Manager, and Image Services Resource Adapter (ISRA).

Baseline Configuration

This configuration shows a typical setup where basic process and content capabilities are required. It includes only the core components, and not the other add-on components that are shipped with the IBM FileNet P8 Platform as functional expansions.
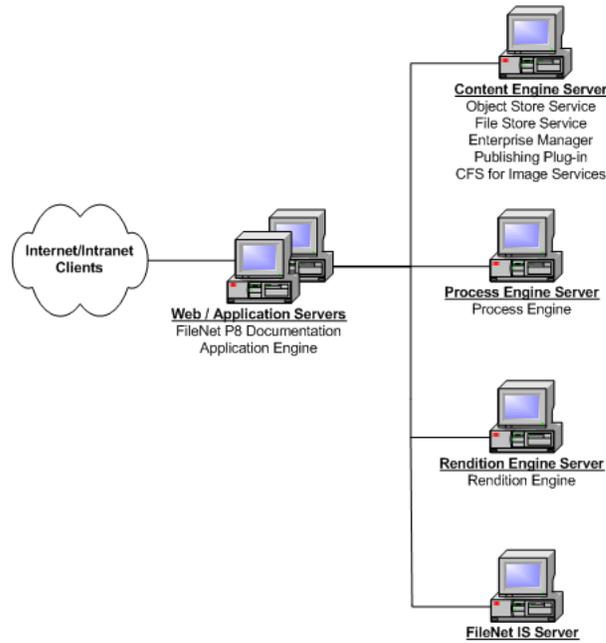
Figure 1: Baseline Configuration

Baseline Configuration With Optional Components

This configuration is useful for environments that plan to utilize not only the core IBM FileNet P8 Platform components but also optional functional expansion components.
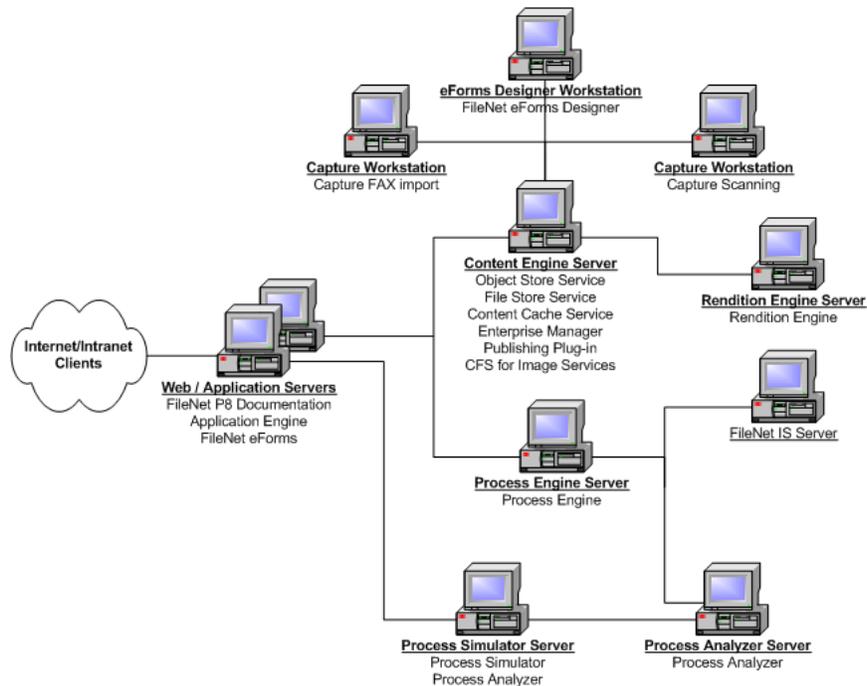
Figure 2: Baseline Configuration With Optional Components

Developer Configuration

This configuration illustrates how a development team might set up an environment for building an application that leverages the IBM FileNet P8 Platform.
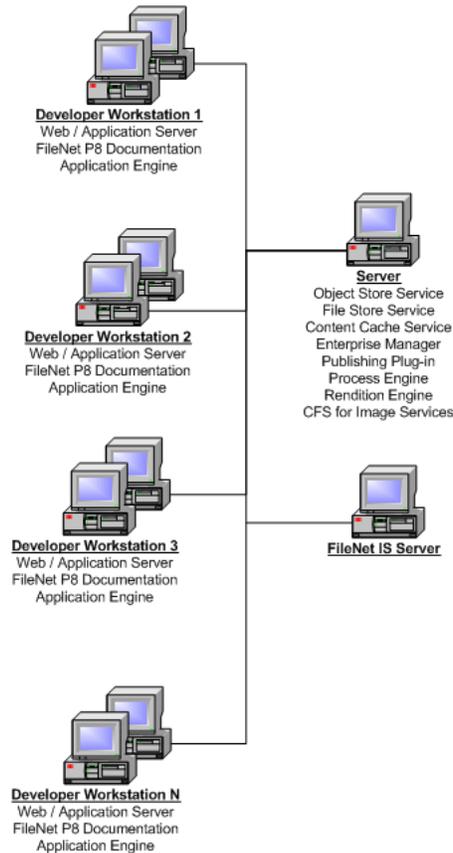
Figure 3: Developer Configuration

NOTES

• It is useful to share the Content Engine and Process Engine services among the development workstations.

• You can use terminal services to run the Enterprise Manager from developer workstations.

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

Demo Configuration

This configuration supports demos, proof-of-concepts, and development on a single Windows server.

Windows Server
FileNet P8 Documentation
Content Engine
Enterprise Manager
Process Engine
Application Engine
Rendition Engine
Publishing Plug-in
Process Simulator
Process Analyzer
FileNet eForms
FileNet eForms Designer
Records Manager
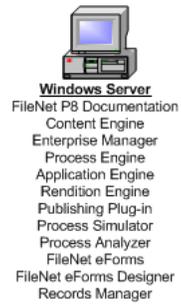
Figure 4: Demo Configuration

NOTE

- IBM recommends that, in production environments, you avoid collocating Records Manager on the same server as Content Engine or Process Engine.

Prerequisite Tasks

To set up and configure prerequisite software for IBM FileNet P8 Platform components

1. Install and configure a Windows domain for Content Engine (if you do not already have one in place). Do Task 1 on page 37.

    NOTE A Windows domain is required for the Content Engine components regardless of the authentication provider.

2. Configure IBM FileNet P8 Platform authentication. Do one of the following:

    *   Task 2a on page 38 (Active Directory)

    *   Task 2b on page 40 (Sun Java System Directory Server)

    *   Task 2c on page 44 (Novell eDirectory)

3. Create IBM FileNet P8 Platform groups and users. Do Task 4 on page 49.

4. Install a database server for Content Engine and Process Engine.

    a. For Content Engine, do one of the following:

        *   Task 5a on page 58 (Microsoft SQL Server)

        *   Task 5b on page 63 (Oracle)

        *   Task 5c on page 68 (DB2)

    b. For Process Engine, do one of the following:

        *   Task 5a on page 58 (Microsoft SQL Server)

        *   Task 5b on page 63 (Oracle)

        *   Task 5c on page 68 (DB2)

5. Install database client software on any computer that needs to access a database engine (for example, a computer running IBM FileNet Enterprise Manager, Content Engine Object Store Service or File Store Service, or Process Engine). Do one of the following:

    *   Task 6a on page 72 (Microsoft SQL Server)

    *   Task 6b on page 74 (Oracle)

    *   Task 6c on page 77 (DB2)

Task 1: Configure Windows Domain

Before you install IBM FileNet P8 Platform software, you must first create and configure a Windows domain.

At least one Windows domain must be configured for the IBM FileNet P8 environment regardless of the authentication provider (Windows, Sun or Novell) that is utilized.

• Verify that the boot partition (where IBM FileNet P8 software will be installed) is NTFS. Note that some features may not install properly or be unavailable if NTFS partitions are not available.

• The Windows domain controller must have a static IP address for proper DNS Server support.

• The Windows domain must have the DNS Server component installed and configured properly.

• Set up and configure the domain controller.

• Verify network configuration settings on all Windows servers (e.g. TCP/IP, DNS, subnet mask, etc.). The Content Engine requires a Windows Domain Controller in a primary DNS tree, which requires a static IP address in a DNS tree.

• Verify DNS configuration settings (e.g. Set Forwarders when required). 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 'see' the Internet or other network resources, then a DNS forwarder pointing to a DNS server serving the external resources (Internet) is required.

• The following IBM FileNet P8 servers or components must be located on machines that are members of the Windows domain:

  – Domain Controller

  – Content Engine

  – IBM FileNet Enterprise Manager only - client machines

  – Servers that contain remote Content Engine File Store and File Store Service

  – Servers that contain remote Content Cache Service

  – Servers that contain remote Object Store Service

  – Microsoft SQL Server(s) - If using Windows Authentication, MS SQL Server(s) can be in the same forest, but don't have to be in the same domain, as long as the MS SQL Login (e.g. Content Engine Servers Group) is in the same domain as Content Engine. For MS SQL Authentication, the MS SQL server can be either inside or outside of the forest where Content Engine is located.

• Proceed to the appropriate authentication provider topic:

  – "Configure for Windows Authentication" on page 38

  – "Configure Authentication under Sun Java System Directory Server" on page 40

  – "Configure Authentication under Novell eDirectory" on page 44

Task 2a: Configure for Windows Authentication

NOTES

These notes apply to machines where IBM FileNet P8 services will be installed and to the machine that will be configured as the Windows 2000 or Windows 2003 domain controller. This Windows domain will supply authentication support for the FileNet P8 domain.

- All Windows 2000 and Windows 2003 servers should have an NTFS hard drive partition where IBM FileNet P8 components will be installed. Generally, this will be the boot partition (drive C:).

- If you are using Domain Local Groups, be aware:

  – In mixed-mode Windows domains, user members of Domain Local Groups will be recognized only if Content Engine is installed on the Domain Controller, in which case authentication/authorization performance may degrade if your authentication provider is Windows Active Directory.

  – The Everyone account belongs to the Pre-Windows 2000 Compatible Access Group.

  – In native-mode Windows domains, Domain Local Groups should exist in the same domain as Content Engine in an Active Directory forest; otherwise user/group members will not be recognized.

- If at any time after initial installation you change any value of the authentication provider configuration data (such as DefaultRealm or UserDisplayName attribute), you will have to restart all instances of Object Store Service, File Store Service, Content Cache Store Service, Enterprise Manager and all applications using the IBM FileNet P8 API.

When DNS forwarders are required for your network configuration

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 'see' the Internet or other network resources, then a DNS forwarder pointing to a DNS server that is serving the external resources (e.g. Internet) is required. Take the following steps 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.

   NOTE If this feature is grayed out (unavailable), you will need to reconfigure your DNS server.

5. If you selected the check box, add an appropriate IP address and click **OK**.

   NOTE This IP address may be the IP address of a DNS server that allows traffic to the Internet.

If installing Content Engine on a Windows domain controller

1. On the machine that is configured as the Windows domain controller, log on with an account that can manage domain security settings.

   NOTE The following steps pertain to Windows 2003. The steps for Windows 2000 differ slightly and are noted in parentheses.

2. Choose **Start** > **All Programs** > **Administrative Tools** > **Domain Controller Security Policy**.

3. Expand Security Settings > Local Policies.

4. Select Users Rights Assignment.

5. In the right panel, double-click **Allow Logon locally** policy. (In Windows 2000, double-click **Log on locally**. You may need to scroll down the list to find this item.)

6. Click **Add User or Group** and then click **Browse**. (In Windows 2000, click **Add** and then click **Browse**.)

7. In the Select Users, Computers, or Groups dialog box, type **Domain Users** and click **OK**. In the Add Users and Groups dialog box, click **OK**. (In Windows 2000, double-click **Domain Users** in the Select Users and Groups dialog box and click **OK**.)

8. Close all open dialog boxes by clicking **OK**, and close the Domain Controller Security Policy snap-in.

Task 2b: Configure Authentication under Sun Java System Directory Server

You will use this task to configure either the Sun Java System Directory Server (v 5.1 SP2) or Sun Java System Directory Server (v 5.2) on a Windows or UNIX server.

This task assumes that Sun Java System Directory Server is installed properly. Be sure to read all pertinent documentation from the 3rd-party software vendor.

All IBM FileNet P8 environments require a Windows domain. This includes a Windows domain controller and Windows accounts that are used for Content Engine services. In addition, Content Engine, Rendition Engine, and IBM FileNet Enterprise Manager only servers must reside in the same Windows domain.

NOTES

This step is performed on the Windows or supported UNIX computer that will be configured as the *IBM FileNet P8 Platform Authentication* server using a Sun Java System Directory Server (v 5.1 SP2 or 5.2).

- When configuring the Sun Java System Directory Server software, you may find references in the user interface to "iPlanet" or "Sun ONE". These terms have been replaced by "Sun Java System Directory Server".

- The Sun Java System Directory Server authentication scenario requires a Windows domain (domain controller) and various Windows accounts for the Content Engine component. The Content Engine server, Rendition Engine server and all IBM FileNet Enterprise Manager servers must be a member of the Windows domain.

- On Windows servers, Sun Java System Directory Server should be installed on an NTFS hard drive partition.

- If there are more than 2,000 users in the Directory Server, you must increase the resource limits in order to correctly display users in IBM FileNet P8. IBM recommends setting this limit to -1 (unlimited). You can either set this limit for the entire LDAP server or for the individual IBM FileNet P8 users. Instructions for either procedure appear below.

- You must have at least one IBM FileNet P8 Platform group and/or user account to create Content Engine object stores.

    CAUTION Changing authentication configuration parameters should be done with care. If you do change any value of the authentication provider configuration data, you will have to restart all installations of the following:

    - Object Store Service

    - File Store Service

Configure Sun Java System Directory Server (v 5.1 SP2)

To set the resource limits for the entire directory server

NOTE User resource limits take precedence over server resource limits. Existing users who have a value specified for resource limits will not be affected by the changes made in the following steps.

1. From the server where Sun Java System Directory Server is installed, log on with an account that has rights to modify the Sun Java System Directory Server environment.

2. Run the Sun Java System Directory Server console and login.

3. Expand the *Domain > Server Group* containers and select your **Directory Server**. Then right-click and select **Open**.

4. Select the **Directory** tab and expand **config** > **plugins** > **ldbm database**.

5. Double-click the **config** folder.

6. From the *Property Editor* sheet for **cn=config,cn=ldbm database,cn=plugins,cn=config**, change **nsslapd-lookthroughlimit** value to **-1** and click **OK**.

7. Select the **Configuration** tab

8. Select the **Performance** tab, change the *Size limit* to **-1** and click **Save**.

9. Select the **Tasks** tab and **Restart** the Directory Server.

To set the resource limits for individual IBM FileNet P8 users

You will need to perform the steps below any time you add additional IBM FileNet P8 users.

1. From the Sun Java System Directory Server console, expand the **Domain** > **Server Group** containers and select your **Directory Server**. Then click **Open**.

2. Select the **Directory** tab.

3. From the left pane, select the *Object* (OU, etc.) that contains the user(s) you want to change.

4. For each IBM FileNet P8 user whose limit you want to change, complete the following steps:

    a. From the right pane, double-click on the user name.

    b. Select **Properties**.

    c. On the left pane of the Properties dialog, select **Account**.

    d. Enter **-1** in the **Look through limit** and **size limit** fields.

    e. Click **OK**.

5. Restart the Directory Server.

To ensure users can view other user/group principals in the directory for security authorization of IBM FileNet P8 objects

1. From the Sun Java System Directory Server console, expand the *Domain > Server Group* containers and select your Directory Server, then click **Open**.

2. Select the **Directory** tab.

3. Right-click **Set Access Permissions** on all suffixes you wish to make available.

    NOTE This is only necessary on all root-level suffixes. Sub suffixes should inherit the permissions from the root suffix(es).

4. Click **New**.

5. Give the ACI name a valid name (e.g. Authenticated Users).

6. Click **Add**.

7. On the Search area drop down box, choose **Special Rights**.

8. Click on **All Authenticated Users**, and click **Add** to add this principal for the access permission.

9. Click the **Rights** tab, and set the minimum rights to **read**, **compare**, and **search**.

10. Click **OK**.

11. Click **OK** to close the **Manage Access Control** dialog.

NOTE If you disable anonymous query in the Sun Java System Directory Server, then non-FileNet P8 services users will not be able to log on to IBM FileNet P8 unless you grant explicit read rights (via an ACI) to the suffix (realm) or suffixes (multi-realm) you want them to be able to access. The minimum required access rights are read and search.

Configure Sun Java System Directory Server (v 5.2)

To set the resource limits for the entire 5.2 Directory Server

NOTE User resource limits take precedence over server resource limits. Existing users who have a value specified for resource limits will not be affected by the changes made in the following steps.

1. From the server where Sun Java System Directory Server is installed, log on with an account that has rights to modify the Sun Java System Directory Server environment.

2. Run the Sun Java System Directory Server console and login.

3. Expand the Domain > Server Group containers and select your Directory Server.

4. Right-click and select **Open**.

5. Select the **Configuration** tab.

6. Select the **Performance** container.

7. Select the **Client Control** tab.

8. For the LDAP group box, ensure that **Size limit** and **Look-through limit** are both set to **Unlimited**.

9. If changes were made, click **Save**.

10. Select the **Tasks** tab and Restart the Directory Server if changes were made.

To ensure users can view other user/group principals in the directory

1. From the Sun Java System Directory Server console expand the Domain > Server Group containers and select your Directory Server.

2. Click **Open**.

3. Select the **Directory** tab.

4. Select your domain (suffix).

5. Right-click **Set Access Permissions** on all suffixes you wish to make available, all its users/group.

   NOTE This is only necessary on all root-level suffixes. Sub suffixes should inherit the permissions from the root suffix(es).

6. Click **New**.

7. Give the ACI name a valid name (e.g. Authenticated Users).

8. Click **Add**.

9. On the Search area drop down box, choose **Special Rights**.

10. Click on **All Authenticated Users** and click **Add** to add this principal for the access permission then click **OK**.

11. Click the **Rights** tab, and set the minimum rights to **read**, **compare**, and **search**.

12. Click **OK**.

13. Click **OK** to close the Manage Access Control dialog.

NOTE If you wish to utilize Smart or Suffix Referrals, it is important that the target (referred suffix or object) has anonymous (All Users) access permission with read, compare, and search rights.

Task 2c: Configure Authentication under Novell eDirectory

You will use this task to configure Novell eDirectory Server for IBM FileNet P8 Platform authentication on a Windows or UNIX server.

NOTES

• This task assumes that Novell eDirectory Server and Client components are properly installed.

• You perform this task on the Windows (2000 or 2003) or any supported UNIX server that will be configured as the IBM FileNet P8 Platform authentication server using Novell eDirectory Server.

• IBM FileNet P8 Platform does not support global referrals because eDirectory does not provide a referral error to chase for LDAP binds.

• The Novell Directory authentication scenario requires a Windows domain (domain controller) and various Windows accounts for the Content Engine component. The Content Engine server, Rendition Engine server and all IBM FileNet Enterprise Manager servers must be a member of the Windows domain.

• The Windows server where Novell eDirectory Server is installed, must have an NTFS hard drive partition.

• You must have at least one IBM FileNet P8 Platform group and/or user account to create Content Engine object stores.

• Novell eDirectory does not support descending order sorting.

• The Novell eDirectory administrator may have to create an index if the sorting attribute is not a default index created automatically by eDirectory.

• **CAUTION** Changing authentication configuration parameters should be done with care. If you do change any value of the authentication provider configuration data, you will have to restart all installations of the following:

  • Object Store Service

  • File Store Service

To configure Novell eDirectory Server software in a Windows or UNIX environment

1. Run the Novell eDirectory Console.

2. Click the **NDS Tree** icon.

3. Create a New eDirectory tree or use an existing tree.

   a. Enter the Tree Name.

   b. Add a new container to the tree. This container type should be DC (domain).

      NOTE Depending on your environment, you may need to add additional containers, such as Country, Organization, Organizational Unit, etc.

   c. Uncheck the *Require TLS for Simple Bind with Password* option.

      HINT If you miss this check box during installation, you can set this value (uncheck) later in the Novell Console.

    d. Click **NDS Authentication** and enter the following information:

- Login name

- Password

- Tree name (search and find with button)

- Context (e.g. DC=<*your_eDirectory_domain_name*>)

    NOTE This is not your Windows domain.

4. Right-click the domain name (dc) that was added above or select an existing domain, and select **Trustee of this Object**.

5. Click **Add a Trustee**.

6. Select **Public**.

7. Verify or select **Browse** Rights.

8. Apply the changes.

9. Refresh the tree.

Task 3: Configure Content Engine and SQL Servers for Windows 2003

CAUTION If you are installing on a Windows 2003 system that has already been upgraded to SP2, do not use these procedures in this topic. Instead, use the procedures provided in the appendix "Configure an IBM FileNet P8 environment for Windows Server 2003 SP1 or R2" on page 375.

The following procedures are required and must be run on the Content Engine and Microsoft SQL server(s) where Windows 2003 is installed.

At least one Windows domain (2000 or 2003) must be configured for the IBM FileNet P8 environment regardless of the authentication provider (Windows, Sun or Novell) that is utilized.

Important notes

- For Windows 2003 servers where Content Engine components will be installed, Microsoft Distributed Transaction Coordinator (MSDTC) and COM+ must be enabled on Object Store Service and SQL Server machines. Otherwise, Content Engine will not run correctly.

- If the MSDTC or COM+ access is not enabled then object store creation will fail when loading the Content Engine Add-ons.

- To complete this task, you must have access to the Windows 2003 media.

- The boot drive partition must be NTFS.

- In an environment with Content Engine on Oracle and Process Engine on MSSQL Server, MSDTC configuration changes for Windows 2003 are *not* needed.

To make configuration change for MSDTC and COM+

Do this procedure on each Content Engine machine and the Microsoft SQL Server machine (if it is remote from each Content Engine).

1. Log on to the Windows 2003 server with an account that has local administrator rights.

2. Select **Start** > **Control Panel** > **Add or Remove Programs**.

3. Select **Add/Remove Windows Components**.

4. Check **Application Server** and then click the **Details** button.

5. Verify **Enable network COM+ access** is selected.

6. Verify **Enable network DTC access** is selected.

7. Click **OK.**

8. Click **Next**

9. Click **Finish**.

10. In the console tree of the **Component Services** administrative tool, expand the **Computers** folder, and right-click the local computer icon.

11. Click **Properties**, and select the **MSDTC** tab, then click **Security Configuration**.

12. In the **Security Configuration** dialog box, select (check) the following boxes, and then click **OK**:

   - Network DTC Access

   - Network Administration

   - Network Transactions

13. Restart the server.

NOTE Remember to do this procedure on each Content Engine machine and the Microsoft SQL Server machine (if it is remote from each Content Engine).

To install IIS for Content Engine WebDAV support

This procedure and the following procedure are optional unless you need WebDAV support for Content Engine.

When installing Windows 2003 you need to install IIS (By default IIS is not installed).

1. Select **Start** > **Control Panel** > **Add or Remove Programs**.

2. Select **Add/Remove Windows Components**.

3. Select **Application Server** and click **Details**.

4. Select **Internet Information Services (IIS)** and click **Details**.

5. Select **World Wide Web Service** and click **Details**.

6. Select **WWW Service** and **WebDAV Publishing** components.

7. Click **OK** on all open dialogs.

8. Click **Next** to complete the installation of the new service.

To configure IIS for WebDAV support

1. Select **Start > Programs > Administrative Tools > Internet Information Services (IIS) Manager**.

2. Right-click the node for your computer and select **Properties**.

3. Select **Enable Direct Metabase Edit** and click **OK**.

4. Expand the tree view of the node for your computer and click the **Web Service Extensions** node.

5. Select **All Unknown ISAPI Extensions** from the list and click **Allow**.

6. Select **WebDAV** from the list and click **Allow.**

7. To enable Windows Webfolders to function in Windows 2003 Server, you must install one of the following on the Windows 2003 Server machine:

   - At least the InfoPath component of Microsoft Office 2003 (via a Custom install)

   - Microsoft Visual Studio .NET

8. Restart the server.

To enable Windows 2003 IIS when acting as a WebDAV client

1. Select **Start > Programs > Administrative Tools > Internet Information Services (IIS) Manager**.

2. Enable and start the WebClient Service.

3. Close The IIS Manager.

To configure WebClient Service for WebDAV support

1. Select **Start > Programs > Administrative Tools > Services**.

2. Right-click the **Web Client** option and select **Properties**.

3. Set the **Startup type** to **Automatic**.

4. Set the **Service status** to **Start** and click **OK**.

5. Close the Administrative tools.

Task 4: Create groups and users required for IBM FileNet P8 installation

All IBM FileNet P8 environments require a Windows Active Directory domain/forest, including a Windows domain controller and Windows accounts that are used for Content Engine services. This requirement applies regardless of the authentication provider you use (e.g., Windows Active Directory, Sun, or Novell).

This task assumes that an authentication provider is properly installed and configured.

NOTES

- Complete the IBM FileNet P8 Platform 3.5.x Security Questionnaire, available on the product support page, to help plan and deploy your environment.

- Process Engine requires that all accounts defined in the directory service have non-blank passwords. Even for IBM FileNet P8 components that do not enforce this requirement, IBM FileNet does not recommend leaving a blank password for any account.

- Under Active Directory authentication, IBM FileNet P8 supports only security groups, not distribution groups. Supported groups can have a scope of domain local (as long as they are in the same domain as Content Engine), global, or universal.

The following tables list the user and group accounts needed for installing and establishing the initial configuration of your IBM FileNet P8 system, including the minimum permissions required.

In many cases, as indicated, you will have to create these accounts ahead of time. In other cases, you can rely on the IBM FileNet P8 setup wizards to set up these accounts for you.

NOTE For more details on these accounts and the roles and security permissions required for each, see the FileNet P8 Platform user and group security help found at **FileNet P8 Administration > Enterprise-wide Administration > Security > Users and groups**. This help topic provides a complete list of the user and group roles, accounts, and responsibilities required to install, configure, and maintain an IBM FileNet P8 system.

Content Engine

Role/Account	Description
<SQL Login>	(MS SQL Server only) MS SQL Server Security Login required to enable the system to create Content Engine objects stores when requested by administrators. Permissions: • Server Roles: System, Security, Disk Administrators, and Database Creators • Database Access: public and db_owner for all object store databases
<Oracle user>	(Oracle only) Oracle database account required to enable the system to create Content Engine object stores when requested by administrators. Permissions: CREATE SESSION, CREATE TABLE, and CREATE SEQUENCE roles

Content Engine

Role/Account	Description
<DB2 user>	(DB2 only) An Operating System user on the database server with the following DB2 database permissions. In the case of a remote database, no equivalent users are needed on the Content Engine server. • Permission to connect • Permission to create tables in the tablespace (CREATETAB) • Permission to use the tablespace (USE OF) (for User and User Temp tablespaces)

Accounts required for DB2 database setup and administration:
 	
Groups
 	
   instance owner primary group
 	
Users
 	
   instance owner
	(DB2 only) Operating system user and group that must exist on the database server.
	
	For details about these accounts, see "Install DB2 server for Content Engine and Process Engine" on page 68 and "Install DB2 Client for Content Engine and Process Engine" on page 77.

Windows local Administrator role	The Windows local machine administrator who: • installs Content Engine. • creates a FileNet P8 domain or adds a new server into an existing FileNet P8 domain (usually the same person who installs Content Engine). Permissions: The Windows local machine administrator must also be a member of Domain Users

Content Engine

Role/Account	Description
<*Content Engine Servers*> group <FNCE_*machinename*> user	The Windows Active Directory group and user accounts used for each machine on which Content Engine has been installed. You can create these accounts ahead of time (with names of your choosing), or allow the Content Engine Setup program to create them for you.
	This group is used for Windows authentication when using SQL Server object stores.
	The Content Engine's services - Object Store Service, File Store Service, and Content Cache Service - all run as the <FNCE_*machinename*> account of the machine on which they are installed. These machine accounts use a randomly created, globally unique password that is never displayed and which system administrators never need to know.
	Permissions: Must have Full Control on:
	• \Program Files\FileNet\Content Engine\sysconfig directory
	• \FS_<*filestorename*> File Store directories
	See the Security help noted on page 49 for further details.
GCD Administrators role	The administrators who can add markings, AddOns, fixed content devices, and who can add or remove FileNet P8 domain objects. You must create these user and group accounts to be able complete Content Engine installation, but they are used for follow-on administration only (e.g., for adding and deleting object stores).
	Permissions: Full Control over the GCD (which defines the FileNet P8 domain).

Content Engine

Role/Account	Description
Authentication Service user role	(Sun or Novell authentication only) Account used by Content Engine to connect to and search the directory server. Assigned as the value of the ServiceUsername attribute during Content Engine installation (i.e., while running the GCD wizard and configuring the authentication provider). Permissions: The service users must be configured with the following minimum rights for each realm: • Sun Java System Directory Service: Read, Search, Compare • Novell eDirectory: Compare, Read
AddOn administrator role	Any single member of the GCD administrators role needed to create FileNet P8 domain AddOns.This account is for internal purposes only, but you must specify it while installing Content Engine (i.e., when creating/joining a FileNet P8 domain via the GCD wizard). Permissions: Full Control over the GCD (that defines the FileNet P8 domain).
IIS user for Content Engine WebDAV role	The Windows domain account that is used to access the IIS server for WebDAV connectivity to the Content Engine object stores. Permissions: Domain privileges in the Windows domain that contains the FileNet P8 domain Content Engine servers.
<P8Apache> user	This is the Windows account that logs on and runs the Apache2 service. Apache strongly recommends against running this service as LocalSystem. See the Security help noted on page 49 for further details.

Content Engine

Role/Account	Description
object store administrators role	The administrators who have Full Control access to an object store. Required for ongoing administration of the object store using the FileNet Enterprise Manager. The Enterprise Manager is designed to be run by object store administrators. Specified each time the GCD administrator runs the Create Object Store wizard to create a new object store. Permissions: Full Control over the object store: Connect to store; create new and modify existing objects (not including FileNet P8 domain objects); delete objects; set owner of any object; read and modify permissions. FileNet highly recommends that you not modify these default permissions.

Process Engine

Role/Account	Description
local Administrator (Windows only)	Installs the Process Engine software. Permissions: Can be the local Windows Administrator or any local Windows user with equivalent permissions. Must also have administrator privileges on the database.
root user (UNIX only)	Installs the Process Engine software. Permissions: Must run in either the Bourne or Korn shell.

Accounts required by Process Engine Setup (UNIX only)
Groups
 	
    fnadmin
    fnusr
    <database administrators group*; default group name = dba*>
 	
Users
 	
    fnsw
    <Oracle user; default user name = oracle>
	Used for various Process Engine administration tasks. Process Engine installation procedures include instructions for creating these accounts. Create these accounts prior to launching the Process Engine Setup wizard. For details about these accounts, see the section for your Process Engine platform:
	
	AIX: "Create or modify internal Process Engine users and groups" on page 180
	
	HP-UX: "Create or modify internal Process Engine users and groups" on page 194
	
	Solaris: "Create or modify internal Process Engine users and groups" on page 167

Process Engine

Role/Account	Description

Local accounts required by Process Engine Setup (Windows only)
 	
Groups
 	
    fnadmin
    fnusr
    <database administrators group*; default group name = dba>*
    ORA_DBA (Oracle only)
 	
Users
 	
    fnsw
    <Oracle user; default user name = oracle> (Oracle only)
	Used for various Process Engine administration tasks. Process Engine Setup automatically creates these accounts with the required permissions; it is not necessary to create them prior to beginning Process Engine installation.
	
	For details about these accounts, see the FileNet P8 Platform user and group security help found at **FileNet P8 Administration > Enterprise-wide Administration > Security > Users and groups > Local accounts required by Process Engine Setup (Windows)**.

Accounts required for DB2 database setup and administration:
 	
Groups
 	
    instance owner primary group
    fenced user primary group
 	
Users
 	
    instance owner
    fenced user
    f_sw
    f_maint
	(DB2 only) Groups and users that must exist at the operating system level on the DB2 database server. All must be created or identified prior to installation of Process Engine. Where they must be created and permissions required for them will vary depending upon the database authentication method used.
	
	For details about these accounts, see "Install DB2 server for Content Engine and Process Engine" on page 68 and "Install DB2 Client for Content Engine and Process Engine" on page 77.

<Process Engine Administrator Group>	Members of this group will administer and make configuration changes to Process Engine, including configuring the Process Engine's LDAP connection to the directory service. There is no default name for this group, which you will designate in Process Task Manager when completing the task called "Configure the Process Engine LDAP Connection" on page 204. Permissions: Must have read permission for the directory service. Also, the *<Process Engine Service User>* (see below) must be a member.

Process Engine

Role/Account	Description

<Process Engine Service User>	Used by Process Engine software for most interactions with the directory service, except when authenticating a user who is logging on.
	
	There is no default name for this user, which you will designate in Process Task Manager when completing the task called "Configure the Process Engine LDAP Connection" on page 204.
	
	Permissions:
	
	• Must belong to the *<Process Engine Administrator Group>* (see above).
	
	• Additional requirements vary by directory service:
	
	  – Sun Java System Directory Service: Read, Search, Compare
	
	    Also, must have resource limits set to -1 (no limit) in the Look through limit and Size limit fields in the Sun Java System Directory Server Console. See "Configure Authentication under Sun Java System Directory Server" on page 40 for instructions on setting these limits.
	
	  – Novell eDirectory: Compare, Read
	
	  – Active Directory: Add permission to read group membership across all accessed domains.

<Process Engine Configuration Group>	Members of this group can make configuration changes to the workflow database. Defining this group is optional; if *<Process Engine Configuration Group>* it exists, only members of that group or of *<Process Engine Administrator Group>* can modify the workflow database configuration. If *<Process Engine Configuration Group>* does not exist, any user can modify the workflow database configuration. There is no default name for this group, which you can designate in Process Task Manager when completing the task called "Configure the Process Engine LDAP Connection" on page 204. Permissions: None required

Application Engine

Role/Account	Description
local Administrator (Windows only)	Installs the Application Engine software. Permissions: Must be a member of the local Administrators group or a user with equivalent permissions.
<installation user> (UNIX only)	Installs the Application Engine software. Permissions: Must have write access to the **/bin** directory and read, write, and execute access to the directory where you plan to install Application Engine.
Users and groups to designate as members of the Application Engine administrator role	Members have administrative privileges for Application Engine. You will specify members of this role as when completing the task called "Set bootstrap preferences" on page 238. Permissions: None. This is an internally managed role not used for directory service transactions.
Users who can start the process router	Starts the process router. Permissions: must have read/write/execute permission to the \Router subfolder (Windows) or /Router subdirectory (UNIX) where the router is installed.

Rendition Engine

Role/Account	Description
<SQL Login>	Any user with SQL Server's "Create Database" permission. Any SQL Server user with SQL Server's "Database Creators" server role. In SQL Server Enterprise Manager, navigate to **Security > Logins**. Right-click the user's name and select **Properties**. Click the **Server Roles** tab and select at least Database Creators. This user is a safer alternative to using SQL Server's **SA** or **SYS** users, which will also satisfy the configuration requirements. (This user is not the same as the **FNRE_Admin** user.)
<FNRE_Admin>	A Windows domain user account that must be added to the local Administrators group on all Rendition Engine servers. Permissions: Domain privileges in the Windows domain that contains the FileNet P8 domain and local administrator privileges on the machine where Rendition Engine is installed.

Task 5a: Install Microsoft SQL Server for IBM FileNet P8

This task uses 3rd-party software. Be sure to read all pertinent documentation from the 3rd-party software vendor. Contact your system/network/database administrator with 3rd-party vendor or environment questions before continuing.

NOTES

Install Microsoft SQL Server on either the computer where the Process Engine, Rendition Engine, or Content Engine software will be installed (subsequently referred to as a local database) or on a separate server (subsequently referred to as a remote database). For information regarding installation of Microsoft SQL Server and Rendition Engine, see FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

• **Windows 2003 Service Pack 1.** If you plan on installing Windows 2003 SP1, refer to "Configure an IBM FileNet P8 environment for Windows Server 2003 SP1 or R2" on page 375.

• If your Microsoft SQL Server database will be remote, then after completing the procedures in this topic you must also complete the procedures in"Install MS SQL Server Client software for IBM FileNet P8" on page 72 on the machine where you will install Process Engine.

• The Microsoft SQL Server must be in the same Active Directory forest if you want to use Windows authentication for connecting to the SQL Server database instance. Otherwise, if using SQL Authentication, there is no need to be in the same forest.

• Choose your security (authentication) mode for Microsoft SQL Server based on the following criteria:

– If Content Engine does not need to support WCM-configured object stores, you may choose either Windows Authentication or Mixed Mode (Windows Authentication and SQL Server Authentication); otherwise you must choose Mixed Mode.

– Process Engine requires Mixed Mode.

– Rendition Engine requires Mixed Mode.

• The MS SQL instance can optionally be shared by the Content Engine, Process Engine, and Rendition Engine components.

• Process Engine and the optional Process Analyzer cannot share an instance. For information on SQL Server requirements for Process Analyzer Engine, see the *Process Analyzer Installation and Upgrade Guide*.

• Each Process Engine server must have a dedicated instance and database.

• If you are using Microsoft SQL Server with Windows Authentication, a Windows Active Directory group account (default: Content Engine Servers) must be configured as a valid Microsoft SQL Server Login.

• Database creation for Content Engine can be handled by the object store creation wizard, or you can manually create the database used by the Content Engine object stores. An existing database that was manually created (as required by Process Engine) must be empty for the object store wizard to use it.

• IBM suggests that you record the values for the following settings as you work through the database installation. This information must be entered during subsequent installations. Be aware that Process Engine Setup allows only alphanumeric characters and underscores.

– Server name

– Instance (e.g. P8_inst)

- Dedicated database name (e.g. VWdb)

- Dedicated file group (e.g. vwdata_fg)

- TCP/IP port number assigned

To install and configure Microsoft SQL Server

Refer to Microsoft's SQL Server 2000 installation instructions, which are available at http://msdn.microsoft.com/library/default.asp?ShowPane=false&URL=/library/psdk/sql/getstart_4fht.htm. In addition, when installing Microsoft SQL Server software:

- Log on as a local user with administrator privileges on the computer where the database will be installed.

- Create a database instance for use by IBM FileNet P8 software, or verify that such an instance already exists.

- If creating a new instance, indicate an appropriate name based on whether Content Engine, Process Engine, or Rendition Engine will use the instance, and whether the database is local or remote. Be aware of the following rules for instance names:

  - The name cannot exceed 16 characters

  - The first character cannot be numeric or '$

  - The name cannot contain special characters, except an underscore or period.

  - The name cannot contain spaces

  - The name cannot be "Default" or "MSSQLServer"

- Verify a **Custom** Microsoft SQL Server installation.

- Verify the authentication **Mode**. Choose your security (authentication) mode for Microsoft SQL Server based on the following criteria:

  - If Content Engine does not need to support WCM-configured object stores, you may choose either Windows Authentication or Mixed Mode (Windows Authentication and SQL Server Authentication); otherwise you must choose Mixed Mode.

  - Process Engine requires Mixed Mode.

  - Rendition Engine requires Mixed Mode.

- Verify the **sa** password for your site.

- Select the database collation settings. Specify one of the following:

  - **Dictionary order, case-*insensitive*, for use with 1252 Character Set** (or any case-insensitive MS SQL Server collation). Case-insensitive collation is the Microsoft default and the setting most used in IBM FileNet P8 environments (because it offers search results without regard to character case).

  - **Dictionary order, case-*sensitive*, for use with 1252 Character Set** (or any case-sensitive MS SQL Server collation). Select case-sensitive MS SQL Server collation only if you are sure your site actually requires (and will continue to require) searches that must differentiate upper-case from lower-case characters (in property choice lists, folder names, etc.).

  CAUTION Select your MS SQL Server collation setting carefully. Switching collation settings after installation can be difficult and time-consuming, especially if you want to switch from case-sensitive to

case-insensitive collation after significant user activity. Also, be aware that if you have a case-sensitive database, and you want to perform a case-insensitive search (programmatically or otherwise), you will likely encounter serious performance degradation on MS SQL Server because the database cannot use column (i.e., property) indexes in these cases.

*   Assign a TCP/IP port number for the instance.

    –   If your instance is the only instance on the server, you can accept port 1433 (default value) in the TCP/IP port number box. If you already have a default or other instance on the server, set 0 as the port number to allow dynamic assignment at instance startup, or set a specific port number.

    –   If the instance is for Content Engine where an object store will be used by WCM.

    –   If the instance is for Rendition Engine to be used by WCM.

    –   If the instance is for Content Engine and you have defined a static port number that is anything but 1433, you must also follow the steps in .

*   Verify that the required Microsoft SQL Server 2000 Service Pack is installed. See the *IBM FileNet P8 Hardware and Software Requirements.*

To configure Microsoft SQL Login for Content Engine

On the Microsoft SQL database computer, use Microsoft SQL Server Enterprise Manager to create a Microsoft SQL Login for the Content Engine Windows Service Account (e.g. Content Engine Servers).

1. Start the **Microsoft SQL Enterprise Manager**.

2. Expand the Microsoft SQL Server *<Server name>[\<Instance name>]* node.

3. Expand the Security folder, right-click **Logins** and select **New Login**.

4. For Windows Authentication (Content Engine must be in same Active Directory forest as SQL Server), locate and select the Content Engine Windows Service Account group (e.g. DOMAIN\Content Engine Servers) using the **Find** button. For SQL Server Authentication, create a new user and password (take note of this information for when creating object stores). For Mixed Mode, verify the **sa** password for your site.

5. Select the following Roles:

    *   If you will create the database via IBM FileNet Enterprise Manager, grant "DOMAIN\Content Engine Servers" group (or the SQL Login db user) the "Database Creator" server role, which can be revoked after the object store is created.

    *   If you will pre-create the database via SQL Server Enterprise Manager, grant "DOMAIN\Content Engine Servers" group (or the SQL Login db user) "Public" and "db_owner" access to the new database.

    NOTE If you wish IBM FileNet Enterprise Manager to perform object store backups and restores, the Microsoft SQL Login must have at least the **System Administrators** and **Security Administrators** roles selected.

6. Click **OK** to save the new login.

To prepare a database for Process Engine

Perform the following steps to create the Process Engine database and modify the tempdb database setting. You can specify a different database name, file name, and data filegroup name. Be sure to record your entries for use during installation of the Process Engine software.

To create the Process Engine database

1. If it is not already running, start the Microsoft SQL Enterprise Manager.

2. Expand the *<Server name>[\<Instance name>]* folder.

3. Right-click the Databases object and select **New Database**.

4. Give the new database a name (e.g. VWdb).

5. From the *Data Files* tab, add a new **File Name** for the database (e.g. vw_data).

6. Specify a disk location for the file.

7. Specify the **Initial size** (e.g. 200).

8. Specify a **Filegroup** (e.g. vwdata_fg).

9. Click **OK** to save.

NOTE You will need these values for the Process Engine installation.

To modify the tempdb database

1. If it is not already running, start the Microsoft SQL Enterprise Manager.

2. Expand the *<Server name>[\<Instance name>]* folder.

3. Expand the Databases object.

4. Right-click the **tempdb** object and select **Properties**.

5. From the *Data Files* tab, change the **Space allocated** for the tempdb to at least **80** MB

6. Click **OK** to save.

7. Close the SQL Enterprise Manager.

To manually create a Microsoft SQL database for Content Engine object store(s)

Use the following steps to manually create a database for a Content Engine object store. Each object store you create will require a separate, empty database.

1. If it is not already running, start the Microsoft SQL Enterprise Manager.

2. Expand the *<Server name>[\<Instance name>]* folder.

3. Right-click the Databases object and select **New Database**.

4. Give the new database a name.

5. From the **Data Files** tab:

    • Accept default disk location or enter a new value.

    • Specify the **Initial size** (e.g., 200 MB) of the database.

6. Click **OK** to save.

Configure a server alias

If the database instance is for Content Engine and has a static TCP/IP defined that is anything other than the default port 1433, you must take the following steps.

1. On the server that has MS SQL Server installed, determine the TCP/IP port assignment of the MS SQL Server instance.

2. Open the MS SQL Server Client Network Utilities application.

3. Select the *DB-Library Options* tab, de-select **Automatic ANSI to OEM conversion**.

4. Select the *Alias* tab and click the **Add** button.

5. Select the **TCP/IP** option from the Network libraries.

6. Uncheck the *Dynamically determine port* option.

7. Enter the Server alias: (e.g., *<server_name>\<instance_name>*)

8. Enter the Server name: (e.g.,*<server_name>\<instance_name>*)

9. Enter the Port number determined during setup.

Task 5b: Install Oracle Server for IBM FileNet P8

The procedures in this task describe how to install and configure an Oracle database that is dedicated or shared by one or more of the following IBM FileNet P8 components:

• 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 instance. You can also share the database with other (non-FileNet) applications. In the dedicated configuration, Content Engine, Process Engine, and Rendition Engine use separate database instances. Each Process Engine server must have a dedicated instance and database.

NOTE If Content Engine and IBM FileNet Image Services use the same Oracle server, each must have its own Oracle instance.

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 machine where no Content Engine, Process Engine, Rendition Engine is installed.

For information regarding installation of Oracle Server and Rendition Engine, see FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

NOTES

• Perform this task on the UNIX or Windows machine that will host the Oracle database to be used by Content Engine, Process Engine, or Rendition Engine.

• Make sure that 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 pathname for the Oracle Server 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.

• If the machine where you install the Oracle database will also host an installation of Content Engine and/or Process Engine, the machine must meet the Content Engine and/or Process Engine requirements listed in the *IBM FileNet P8 Hardware and Software Requirements.*

• Refer to *IBM FileNet P8 Hardware and Software Requirements* for operating-system Service Pack and Oracle version and patch set requirements. The Oracle patches are available at OracleMetaLink. The Oracle patch-installation procedure may be less complicated if done before you create any databases.

• If your Oracle database will be remote, then after completing the procedures in this topic you must also complete the procedures in on each machine where you will install Content Engine, Process Engine, or Rendition Engine.

- The machine where you install the Oracle database must meet the following requirements if it will also be hosting an installation of Process Engine:

    – The machine must have a static IP address.

    – (Windows) The file system must be NTFS.

- Transaction Processing is the required configuration type for the database that supports Content Engine. Choose this configuration type if your database will be will be dedicated to Content Engine or shared with Process Engine.

- Do not set NLS_LENGTH_SEMANTICS at the system level. If you are sharing the Oracle installation for Content Engine with other applications that require this setting, set NLS_LENGTH_SEMANTICS at the session level for those applications.

Install an Oracle database engine

The following procedure shows the minimal choices (specific to the needs of Content Engine and Process Engine) for installing a database engine. Consult the Oracle9i or Oracle 10g installation documentation for complete preinstallation requirements and instructions. The size requirement for a database dedicated to Rendition Engine is specified in the file **Oracle-Repository.sql** (located on the Rendition Engine installation CD).

- For Oracle 9i, choose the following from the list of available product components.

    – Oracle9i Server

    – Oracle Net Services

        - Oracle Net Listener

    – Oracle9i Development Kit

        - Oracle Call Interface (OCI)

    – (Windows) Oracle Windows Interfaces

        - Oracle Services for Microsoft Transaction Server

    – Oracle9i Documentation (recommended)

- For Oracle 10g, choose the following from the list of available product components.

    – Oracle10g Server

    – Oracle Net Services

        - Oracle Net Listener

    – Oracle Call Interface (OCI)

    – (Windows) Oracle Windows Interfaces

        - Oracle Services for Microsoft Transaction Server

    – Oracle10g Documentation (recommended)

- 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)
```

> **NOTE** If Oracle is configured to use LDAP, TNSNAMES must appear in the names_directory_path ahead of LDAPNAMES.
>
> **sqlnet.ora** is typically in **$ORACLE_HOME/network/admin** on UNIX or *ORACLE_HOME*\network\admin on Windows operating systems.

1. Install the latest Oracle patch sets, as specified in the *IBM FileNet P8 Hardware and Software Requirements*.

2. Start the listener and the Oracle database service/processes (Windows/UNIX) if they haven't started automatically.

Create an Oracle database

Oracle documentation describes several ways to create a database. IBM recommends you use the Database Configuration Assistant (DBCA).

IBM FileNet requires the following settings:

- Database configuration type

  If this 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 as specified in .

3. On the Creation Options screen, click **Create Database**.

Create tablespaces for Content Engine

Using Oracle Enterprise Manager or SQL*Plus, create a user, password, and default tablespace in the Oracle database for each object store that Content Engine will access. Grant CONNECT and RESOURCE roles to the user. These two roles combine to include the minimal privileges required by Content Engine: CREATE SESSION, CREATE TABLE, and CREATE SEQUENCE. IBM FileNet Enterprise Manager will prompt you for this user and password when you create an object store corresponding to the default tablespace.

NOTE Because these two roles include other privileges as well, IBM recommends that you design your own roles if you prefer to grant only the minimal privileges required by Content Engine.

WARNING The Oracle user you create for an object store must be unique. That is, multiple object stores must *not* share the same Oracle user. Otherwise, the objects you intend to add only to one object store will show up in all object stores that share the same Oracle user.

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

For performance reasons, IBM recommends that you 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 (MB)	Description
test1	Permanent	200	Permanent tablespace for object store
temptest1	Temporary	400	Temporary tablespace for object store.

If you are not using Oracle Enterprise Manager to create the user and tablespaces, refer to "Set Up Oracle tablespaces manually" on page 367 for examples on how to use SQL commands to manually create the user and the permanent and temporary tablespaces for an object store.

Create tablespaces for Process Engine

Using Oracle Enterprise Manager or SQL*PLus, create the tablespaces shown in the following table for the Process Engine. Note that the indexing 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.

The recommended tablespace names, types, and minimum sizes are shown in the following table:

Tablespace Name	Tablespace Type	Minimum Size (MB)	Description
vwdata_ts	Permanent	200	Default name of the dedicated FileNet default tablespace
vwtemp_ts	Temporary	400	Default name of the dedicated FileNet temporary tablespace
vwindex_ts (optional)	Permanent	200	Default name of the optional index tablespace.

NOTE If you don't create vwindex_ts, vwdata_ts will be used for indexes.

Set environment variables for the Oracle and root users on UNIX database server

If your Oracle database runs on a UNIX machine, set the following environment variables in the .profile, .cshrc, or .login file before using the Oracle database. (On Windows, these variables are set by the Oracle Universal Installer.)

- For the oracle user, set the following.

    – ORACLE_SID

    – ORACLE_HOME

    – Set PATH to **$ORACLE_HOME/bin** (HP-UX and 32-bit Solaris only)

    – Set LD_LIBRARY_PATH to **$ORACLE_HOME/lib** (HP-UX and 32-bit Solaris only)

    – Set LD_LIBRARY_PATH to **$ORACLE_HOME/lib32** (64-bit Solaris only)

    – Set LIBPATH to **$ORACLE_HOME/lib32:$ORACLE_HOME/lib** (AIX only)

    – Set SHLIB_PATH to **$ORACLE_HOME/lib32** (HP-UX only)

- For the root user, set ORACLE_HOME.

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.

To enable automatic transaction recovery, perform 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).

In addition, 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).

Editing the listener.ora file

IBM recommends that you use the Oracle utilities to configure the listener, which creates the **listener.ora** file. If for some reason you need to manually update the **listener.ora** file (for example, to change the database name), refer to .

Task 5c: Install DB2 server for Content Engine and Process Engine

This task uses 3rd-party software. Be sure to read all pertinent documentation from the 3rd-party software vendor. Contact your system/network/database administrator with 3rd-party vendor or environment questions before continuing. When this procedure has been completed, proceed to "Install DB2 Client for Content Engine and Process Engine" on page 77.

NOTES

- Only a remote DB2 database is supported.

- Content Engine and Process Engine do not share a database but can share the instance. Two databases must be created and there are different requirements for each.

- Each Process Engine server must have a dedicated instance and database.

- Content Engine and Process Engine have different requirements for DB2 users and groups.

- See "IBM FileNet P8 Database Character Sets" on page 372 for information on character set requirements.

IBM recommends using Database Managed Space (DMS) for user and user temp tablespaces for both Content Engine and Process Engine.

IBM recommends that you record the values for the following settings as you work through the database installation. This information must be entered during subsequent installations of Process Engine and Content Engine. Be aware that Process Engine Setup allows only alphanumeric characters and underscores.

- DB2 Server name

- DB2 server database instance name(s) (e.g. P8_inst)

- Content Engine and Process Engine dedicated database names (e.g. VWdb)

- Dedicated tablespace names (e.g. vwdata)

- TCP/IP port number assigned to the DB2 instance

- f_sw password (Process Engine only)

- f_maint password (Process Engine only)

- User ID and password for Content Engine DB2 user

Create DB2 users and groups

You must create operating system users and groups to function as instance owners and the primary group for the instance owner. for both Content Engine and Process Engine. A fenced user and a primary group for the fenced user must be created for Process Engine. You may specify your own user and group names as long as they adhere to system naming rules and DB2 naming rules.

- Instance Owner - one is required if the database instance is being shared by Content Engine and Process Engine, two instance owners are required if Content Engine and Process Engine will have separate database instances.

- Instance Owner primary group - one is required if the database instance is being shared by Content Engine and Process Engine, two instance owner primary groups are required if Content Engine and Process Engine will have separate database instances.

The **instance owner** home directory is where the DB2 instance will be created.

- Fenced User

- Fenced User primary group

  The **fenced user** runs user-defined functions (UDFs) and stored procedures outside the address space used by the DB2 database.

Each instance should have its own home file system.

Each instance owner must have a unique home directory. All of the files necessary to run the instance are created in the home directory of the instance owner's user ID/username.

The instance owner and its primary group are associated with every instance. The instance owner is assigned during the process of creating the instance.

The primary group of the instance owner automatically becomes the system administration group for the instance and gains SYSADM authority as a database administrator (DBA) over the instance. Other user IDs or user names that are members of the primary group of the instance owner also gain this level of authority.

NOTE The **root** user cannot act as a DBA. You must log on as the instance owner to act as the DBA.

When the database authentication type is set to SERVER or SERVER_ENCRYPT, two additional operating system users must be created for Process Engine on the database server where the DB2 database resides. See .

Content Engine does not have requirements for specific users or groups to be created. Create a new operating system user or identify an existing operating system user to grant DB2 permissions for. This user ID and password will be required later when creating Object Stores. The DB2 permissions required for this user are:

- Permission to connect

- Permission to create tables in the tablespace (CREATETAB)

- Permission to use the tablespace (USE OF) (for User and User Temp tablespaces)

Install DB2 ESE

As **root** user, create a temporary file system with 2.0 GB of free space to contain the tar.Z and the uncompressed installation file.

Install the DB2 UDB Enterprise Edition. Content Engine and Process Engine both need 64-bit instances and a single instance can be shared.

When the installation is finished, view the status report or go to **/tmp** to view all DB2 install logs to ensure there are no errors.

Make note of the TCP/IP port number assigned to the instance or instances, as the port number will be needed during the DB2 client configuration steps. The port number assigned can be found in the **/etc/ services** file, associated with the DB2 instance(s) just created.

After a successful installation, the DB2 instance should be up and running. Continue with the next section.

Create DB2 instance(s)

Content Engine and Process Engine can share an instance, or each engine can have its own instance. Both Content Engine and Process Engine require 64-bit instances.

Set TCP/IP as the default protocol

Log on as the instance owner and set DB2COMM by executing:

db2set DB2COMM=tcpip

Determine Page Size and User Fields

When you create a DB2 database, you have a choice of several page sizes for your tablespace: 4 KB, 8 KB, 16 KB, and 32 KB. The page size you choose affects the number and size of the user-defined index fields, and it also affects the maximum row length of the tables within that tablespace.

The important thing to remember is that **the total row length of all the fields (including system and user) cannot be larger than the page size**. The DB2 page size you select when you create the database must be large enough to hold at least one complete record. DB2 cannot retrieve a partial record or spread a single record onto two pages.

DB2 can, however, retrieve multiple records in one page if the page size is large enough.

Create the DB2 Databases for Content Engine and Process Engine

Log on as the database instance owner as defined earlier.

The database name needs to be unique and from 1 to 8 characters long. For example, **VWdb** This is the default database name in the Process Engine installer.

Create the DB2 Tablespace

IBM Recommended Tablespace Name	Actual Assigned Name	Minimum Size (MB)	Actual Created Size	Minimum Page Size (KB)
vwdata_ts (for PE)		200		8 (recommended)
cedata_ts (for CE)		256		32 (required)
user temporary ts (for CE)		40		32 (required)
system temporary ts (for CE)		40		32 (required)

Create additional DB2 users and groups (Process Engine, SERVER or SERVER_ENCRYPT authentication only)

Create the following two additional operating system users with SYSADM authority to access the DB2 database.

• f_sw

– Primary runtime Process Engine database user.

– Used only by the Process Engine software to access the DB2 database.

   – Must be a member of operating system group having SYSADM authority of the DB2 instance that will be used by the Process Engine software.

- f_maint

   – Process Engine Database maintenance user.

   – Mainly used by the customer for database maintenance.

   – Recommended to be member of group having SYSADM authority of the DB2 instance that will be used by the Process Engine software.

Unlike the instance owner user, these users don't need to have separate file systems for their home directories. They must belong to the primary group of the instance owner.

After creating the new users and setting their group memberships, log off as **root** user, log on as each of the new users, and change the password to avoid connection problems the first time they're used.

Grant database permissions for f_sw and f_maint (Process Engine, CLIENT authentication only)

If you will be using DB2 client authentication, the f_sw and f_maint users do not exist on the database server but will need to be created on the client. These two users will need to be granted the following permission in the DB2 database for Process Engine.

- f_sw

   • Primary runtime PE database user.

   • Used only by the PE software to access the DB2 database.

   • Must be granted the following permissions in the DB2 database:

   – Connect

   – Createtab

   – Bindadd

   – db2set DB2_SNAPSHOT_NOAUTH=on

- f_maint

   • Process Engine Database maintenance user.

   • Mainly used by the customer for database maintenance.

   • Must be granted the following permissions in the DB2 database:

   – dbadm

   – db2set DB2_SNAPSHOT_NOAUTH=on

Task 6a: Install MS SQL Server Client software for IBM FileNet P8

This task uses 3rd-party software. Be sure to read all pertinent documentation from the 3rd-party software vendor. Contact your system/network/database administrator with 3rd-party vendor or environment questions before continuing.

NOTES

- Microsoft SQL Server should have been installed on either the computer where the Process Engine or the Content Engine software will be installed (subsequently referred to as a local database) or on a separate server (subsequently referred to as a remote database).

- Remote MS SQL Server databases are supported by Process Engine, Content Engine, Rendition Engine, and Publishing Plug-in Server (Content Engine server).

- Remote MS SQL connections for Rendition Engine and Content Engine are handled by Microsoft Data Access Components, which is installed by default on IBM FileNet Enterprise Manager, and Rendition Engine servers.

- The Microsoft SQL Server must be in the same Active Directory forest if you want to use Windows authentication for connecting to the SQL Server database instance. Otherwise, if using SQL Authentication, there is no need to be in the same forest.

To install MS SQL Server Client software for remote MS SQL database access

Ensure that all users and groups defined on the local server are also defined and granted security permissions on the database server.

1. Install the MS SQL Server Client software, the MS SQL Server Service Pack, and test the database communications.

    a. Log on with an account that has local administrator privileges on the computer where the MS SQL Server client software will be installed.

    b. Install the MS SQL Server Client software using the following options:

        i. On the Installation Selection dialog, choose **Create a new instance of SQL Server, or install Client Tools**.

        ii. On the Installation Definition dialog, choose **Client Tools Only**.

        iii. Accept the defaults for the rest of the installation.

    c. When the installation is complete, (for Windows 2000) click **Start** > **Programs** > **Microsoft SQL Server** > **Client Network Utility** or (for Windows 2003) click **Start** > **All Programs** > **Microsoft SQL Server** > **Client Network Utility.**

    d. On the *DB-Library Options* tab, de-select **Automatic ANSI to OEM conversion**.

    e. Download and install the required Microsoft SQL Server 2000 Service Pack, as indicated in the *IBM FileNet P8 Hardware and Software Requirements*.

To configure Process Engine or Content Engine to use an MS SQL Server database engine on a different subnet

Remote MS SQL Server databases on different subnets are supported by the Process Engine and Content Engine servers.

1. On the server that has MS SQL Server installed, determine the TCP/IP port assignment of the MS SQL Server instance.

2. Open the MS SQL Server Client Network Utilities application on the Process Engine or Content Engine server.

3. Select the *DB-Library Options* tab, de-select **Automatic ANSI to OEM conversion**.

4. Select the Alias tab and click the **Add** button.

5. Select the **TCP/IP** option from the Network libraries.

6. Uncheck the *Dynamically determine port* option.

7. Enter the **Server alias**: (e.g., *<machine_name>\<instance_name>*)

8. Enter the **Server name**: (e. g., *<machine_name>\<instance_name>*)

9. Enter the Port number determined during setup.

Test the connection between the MS SQL Server Client installation and the remote database engine

If the MS SQL Server Client software was installed, test the connection by entering the following at a command prompt:

> isql -E -S *<servername>*[*<instance_name>*]

> or

> isqlw -E -S *<servername>*[*<instance_name>*]

If the connection fails, be sure to resolve the problem before proceeding.

If the MS SQL Client software was not installed, test the connection per the following steps.

1. Create a file named test.udl on the Desktop or in a file system.

2. Run test.udl.

3. Select the OLEDB provider for MS SQL Server from the Provider tab.

4. Click on the **Connection** tab and choose the appropriate information.

Task 6b: Install Oracle Client for IBM FileNet P8

The procedure in this task describe how to install the Oracle Client software to prepare for the installation of Content Engine, Process Engine, or Rendition Engine.

NOTES

- Install Oracle Client on any machine that will host Content Engine, Process Engine, Rendition Engine, or any other IBM FileNet P8 component that needs to access an Oracle database.

- Make sure that the machine where you will install Oracle Client satisfies all pre-installation requirements specified in the Oracle installation documentation.

- The Process Engine installer must log in to Oracle using SYS as SYSDBA credentials. Because Oracle 9i disables remote SYS login by default, a DBA must change this before the installation can take place. Modify init.ora to allow remote SYS login.

- 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 pathname 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.

- For operating-system Service Pack and Oracle version and patch set requirements, see the *IBM FileNet P8 Hardware and Software Requirements*.

For information regarding installation of Oracle Client and Rendition Engine, see FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

To install the Oracle client

The following procedure shows the minimal choices (specific to the needs of Process Engine) for installing a database client. Consult the Oracle9i or Oracle 10g installation documentation for complete preinstallation requirements and instructions. From the Available Products screen, click **Oracle9i Client**.

1. For Oracle 9i, choose the following from the list of available product components.

    - Oracle9i Client

    - Oracle Network Utilities

    - Oracle Database Utilities

    - SQL*PLUS

    - (Windows) Oracle Windows Interfaces

        - Oracle Services for Microsoft Transaction Server

2. For Oracle 10g, choose the following from the list of available product components.

    - Oracle10g Client

    - Oracle Network Utilities

    - Oracle Database Utilities

    - SQL*PLUS

- (Windows) Oracle Windows Interfaces

  - Oracle Services for Microsoft Transaction Server

3. Using Oracle Net Configuration Assistant, test the connection to the Oracle database server with an appropriate Oracle user and password.

   NOTE If the database is to be used by Rendition Engine, you can also configure the connection to the database from the Database Configuration tab of the Vista Configuration application. For more information, see the topics under FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

4. 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.

   - (Windows) Set/modify the value of the NLS_LANG key via System Properties in the Control Panel.

   - (UNIX) Add NLS_LANG to the shell environment login files for each user who will be logging onto the machine to run IBM FileNet P8 software.

   NOTE To affect the environment for only Process Engine, set NLS_LANG for just the fnsw user. (On Windows platforms, fnsw is created by the Process Engine installer; on UNIX platforms, you manually create fnsw as part of the Process Engine installation task.)

5. 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:

   - (Windows) LOCAL

   - (UNIX) TWO_TASK

6. If you are going to install Process Engine software on a UNIX machine to connect to a remote Oracle database, set the following environment variables in the startup file of the default oracle user.

   - ORACLE_SID

   - ORACLE_HOME

   - Set PATH to **$ORACLE_HOME/bin** (HP-UX and 32-bit Solaris only)

   - Set LD_LIBRARY_PATH to **$ORACLE_HOME/lib** (HP-UX and 32-bit Solaris only)

   - Set LD_LIBRARY_PATH to **$ORACLE_HOME/lib32** (64-bit Solaris only)

   - Set LD_LIBRARY_PATH_64 to **$ORACLE_HOME/lib** (64-bit Solaris only)

   - Set LIBPATH to **$ORACLE_HOME/lib32:$ORACLE_HOME/lib** (AIX only)

   - Set SHLIB_PATH to **$ORACLE_HOME/lib32** (HP-UX only)

7. 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)
```

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

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

Task 6c: Install DB2 Client for Content Engine and Process Engine

This task uses 3rd-party software. Be sure to read all pertinent documentation from the 3rd-party software vendor. Contact your system/network/database administrator with 3rd-party vendor or environment questions before continuing.

NOTES

In this task you will:

* Install and configure the DB2 client software

* Create several operating system users

* Create a client instance to connect to the remote DB2 server instance (Process Engine, UNIX only)

Before starting this task you will need the following information:

* The database names on the remote database server for both Content Engine and Process Engine databases

* The TCP/IP port number(s) for the remote database instance(s)

* The passwords assigned to the f_sw and f_maint users (Process Engine only)

* The username and password of the operating system user on the database server (Content Engine only)

Make note of the database aliases created in this task as they will be needed in the Content Engine and Process Engine installation steps:

* In Process Engine setup, this information will be entered in response to the prompt for the database alias name.

* In the Content Engine Object Store Creation Wizard, this information will be entered in response to the prompt for the database alias name.

Install DB2 Client software

To install the DB2 Client, you must be logged on as **root** user (UNIX) or as **Administrator** (Windows).

Install the DB2 Administration Client or the DB2 Run-Time Client. Content Engine and Process Engine both need 32-bit instances and a single client instance can be shared.

NOTE On Windows, an instance is automatically created during installation of the client software.

When the installation is finished, view the status report or go to **/tmp** (UNIX) or **\My Documents\DB2log** (Windows) to view all DB2 install logs to ensure there are no errors.

Reboot the Content Engine DB2 client.

Create DB2 Users and Groups (Process Engine, UNIX only)

Operating system users and groups must be created for the client instance on UNIX platforms only. Two users and two groups are required to create and use DB2 client instance for Process Engine on a UNIX platform. You may specify your own user and group names as long as they adhere to system naming rules and DB2 naming rules.

* Instance Owner - one is required for Process Engine.

* Instance Owner primary group - one is required for Process Engine.

The **instance owner** home directory is where the DB2 instance will be created.

- Fenced User - Process Engine only

- Fenced User primary group - Process Engine only

  The **fenced user** runs user-defined functions (UDFs) and stored procedures outside the address space used by the DB2 database.

Each instance should have its own home file system.

Each instance owner must have a unique home directory. All of the files necessary to run the instance are created in the home directory of the instance owner's user ID/username.

The instance owner and its primary group are associated with every instance. The instance owner is assigned during the process of creating the instance.

The primary group of the instance owner automatically becomes the system administration group for the instance and gains SYSADM authority as a database administrator (DBA) over the instance. Other user IDs or user names that are members of the primary group of the instance owner also gain this level of authority.

NOTE The **root** user cannot act as a DBA. You must log on as the instance owner to act as the DBA.

When the database authentication type is set to SERVER or SERVER_ENCRYPT, the following two additional operating system users must be created on the database server where the DB2 database resides.

Create instances (Process Engine, UNIX only)

Depending upon your configuration, create one or more 32-bit instances as required.

Create additional DB2 users and groups (Process Engine, CLIENT authentication only)

Create the following two additional operating system users with SYSADM authority to access the DB2 database.

- f_sw

  – Primary runtime Process Engine database user

  – Used only by the Process Engine software to access the DB2 database.

- f_maint

  – Process Engine Database maintenance user

  – Mainly used by the customer for database maintenance

Unlike the instance owner user, these users don't need to have separate file systems for their home directories.

After creating the new users and setting their group memberships, log off as **root** user, log on as each of the new users, and change the password to avoid connection problems the first time they're used.

Catalog the DB2 server node

Reboot the server and log on as the instance owner on the Process Engine or Content Engine.

Use the db2ca tool, or catalog the DB2 server node as follows:

db2 catalog tcpip node <server alias> remote <server name> server <server side instance tcpip port #>

For example:

   db2 catalog tcpip node **aix20nod** remote **hqvwais20** server **60004**

Catalog the Content Engine and Process Engine databases

Use the db2ca tool, or create aliases for the DB2 database.

For example:

   db2 catalog database PEDBAIX at node aix20nod [as <alias name>]

   db2 catalog database CEDBAIX at node aix20nod [as <alias name>]

Verify the connection to the DB2 database

Since the DB2 database is located on a remote server, verify that TCP/IP communications have been configured successfully on both server and client computers.

You can use the DB2 Configuration Assistant on a Windows client(enter **db2ca** at a command prompt) to connect the DB Client to the DB2 database on the remote database server. You can also use db2 at a command prompt.

Verify the ability to log on to the DB2 database

After successfully connecting to the remote DB2 database, you can check the connection using either the Command Line Processor (CLP) or db2. Launch the Command Line Processor and enter for example:

   > db2=> connect to <db_alias_name> user f_sw using <f_sw password>

   or from a command prompt using db2 :

   > db2 connect to <db_alias_name> user f_sw using <f_sw password>

Installation Tasks

To install the core IBM FileNet P8 Platform components

1. Install the IBM FileNet P8 Platform documentation for your application server. Do one of the following:

    - Task 7a on page 81 (WebSphere)

    - Task 7b on page 86 (WebLogic)

    - Task 7c on page 92 (JBoss)

    - Task 7d on page 97 (Tomcat)

    - Task 7e on page 102 (Oracle Application Server)

    - Task 7f on page 107 (Sun Java Application Server)

2. Set up Content Engine.

    a. Install Content Engine. Do one of the following:

        - Task 8a on page 112 (typical install)

        - Task 8b on page 127 (custom install)

    b. Configure the Content Engine environment. Do Task 9 on page 145.

    c. Create an Object Store. Do Task 10 on page 147.

3. Set up Process Engine.

    a. Install Process Engine. Do one of the following:

        - Task 11a on page 155 (Windows 2000)

        - Task 11b on page 167 (Sun Solaris)

        - Task 11c on page 179 (AIX)

        - Task 11d on page 191 (HP-UX)

    b. Start the Pooled Process Manager (PPM). Do Task 12 on page 203.

    c. Configure the LDAP connection. Do Task 13 on page 204.

4. Install Application Engine. Do Task 14 on page 205.

5. Set up Application Engine. Do one of the following:

    - Task 15a on page 213 (WebSphere)

    - Task 15b on page 220 (WebLogic)

    - Task 15c on page 223 (JBoss/Tomcat)

    - Task 15d on page 228 (Oracle Application Server)

    - Task 15e on page 231 (Sun Java Application Server)

    - Task 15f on page 234 (generic server)

6. Install Service Packs and associated Hot Fix Packs. Do Task 16 on page 236.

Task 7a: Install IBM FileNet P8 Platform documentation (WebSphere)

This topic covers the installation, and (if necessary) search-related reindexing of your IBM FileNet P8 Platform documentation on a WebSphere application server. Because the IBM FileNet P8 Platform documentation includes a Java^{TM}-based full-text search engine, it runs as a web-based application.

You must install the IBM FileNet P8 Platform documentation on a web application server if you intend to access online help from within any IBM FileNet P8 applications (for example, Workplace, Enterprise Manager, Process Task Manager, and Records Manager) or use the full-text search feature.

NOTES

- You may install the IBM FileNet P8 Platform documentation and Application Engine on the same machine.

- To ensure proper documentation search functionality, enable JavaScript^{TM} support on the user's browser client.

- Because of the number of possible network and web configurations, contact your network or web administrator for specific system, software, and security requirements.

- Under WebSphere, IBM FileNet P8 documentation must be installed and deployed as a WAR file (ecm_help.war). You cannot deploy as an EAR file because in that case the IBM FileNet P8 help remains packaged and the internal documentation search engine will not function as expected.

- The requirements described in this topic may also exist for associated custom application help, or for any customizations you may have applied to the IBM FileNet P8 Platform documentation. This documentation requirement may also exist for associated custom applications. For further details on customizing or localizing IBM FileNet P8 Platform documentation, see the file ecm_help/transkit/ P8DocTransKit.htm on the IBM FileNet P8 Platform Documentation CD or wherever you install the IBM FileNet P8 Platform documentation.

- If you are upgrading your IBM FileNet P8 Platform installation and have downloaded a refresh of the documentation from the IBM support website, see "Upgrade IBM FileNet P8 Platform Documentation" on page 306 for instructions on upgrading the documentation.

Overview of procedures

Perform the procedures in the following subtopics in the order presented, unless otherwise directed below:

- "Install IBM FileNet P8 Platform documentation" on page 82 -- Begin here if you are installing the IBM FileNet P8 Platform documentation for the first time.

- "Install functional expansion documentation" on page 82 -- Begin here if you have already installed the IBM FileNet P8 Platform documentation and need to add on the documentation for IBM FileNet functional expansions (e.g., Process Analyzer, Process Simulator, IBM FileNet eForms, Content Federation Services for Image Services, Records Manager, Web Content Manager, Team Collaboration Manager, or IBM FileNet P8 Portlets).

- "Update documentation search index" on page 83 -- Perform this procedure only after you have added on documentation for your functional expansions. Otherwise, if you install only IBM FileNet P8 Platform documentation, which has a baseline search index, you may skip this procedure.

- "Complete and verify the documentation installation" on page 84 -- Perform this final procedure in all cases, but only after you have installed the IBM FileNet P8 Platform documentation, added on documentation for your functional expansions, and (where required) regenerated the search index.

Install IBM FileNet P8 Platform documentation

This procedure establishes the web application for documentation associated with IBM FileNet P8 Platform. It assumes that your WebSphere application server is already installed and operational.

To install the IBM FileNet P8 Platform documentation

1. If this is a Windows server, verify that Microsoft Windows Internet Information Services (IIS Admin Service, Simple Mail Transport Protocol (SMTP), and World Wide Web Publishing Service) are stopped and set to *manual*.

   NOTE Skip this step if the application server will contain Content Engine software.

2. Insert or mount the *IBM FileNet P8 Platform Documentation* CD, as follows:

   (UNIX*)* Insert and mount the *IBM FileNet P8 Platform Documentation* CD.

   (Windows) Insert the *IBM FileNet P8 Platform Documentation* CD.

3. From the WebSphere Administrative Console, **Install a New Application** using the **ecm_help.war** file located on the Documentation CD. Follow all WebSphere installation screens.

   NOTE The *Context Root* (def: **ecm_help**) and installation directory can be user-defined, so substitute your actual location for these commands.

4. Continue as follows:

   • If you need to install documentation for functional expansions, go on to the procedure in the following topic, .

   • If you have no further documentation to install, go on to the procedure in the topic .

Install functional expansion documentation

Use the procedure in this topic to install documentation for functional expansions onto an existing IBM FileNet P8 Platform documentation server. If you have no such documentation to add on, skip to the procedure .

To install functional expansion documentation

1. Determine the functional expansion documentation media source or location:

   • For most functional expansions, use the *Documentation CD* included as part of the particular software's CD set.

   • For Content Federation Services for Image Services, use the **Documentation** directory on the software CD.

2. If the IBM FileNet P8 Platform documentation application is running, stop it on the machine where the documentation is installed, and verify that no processes are accessing the documentation web application. On UNIX or Windows, stop the application from the Administrative Console.

3. Copy the functional expansion documentation to the IBM FileNet P8 Platform documentation server, as follows:

   • (UNIX) When copying functional expansions, use a `cp` copy command from a terminal to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

```
cp -R <mount_location> <target_destination>
```

WARNING Care should be taken when copying folders in UNIX. Dropping-and-dragging of folders 'replaces' any existing folder(s). Also note that your switch (-R) requirements may be different from the example shown. Contact your system administrator if you have questions about proper syntax.

- (Windows) Use a copy command from a command prompt or drop-and-drag the files to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

- (Content Federation Services for Image Services) Copy the **cfs_guide.pdf** from the **Documentation** directory on the software CD into the **ecm_help/cfs_help** directory deployed on the existing IBM FileNet P8 Platform documentation server.

NOTE Repeat this step for each of your functional expansions or custom applications. You can copy more than one functional expansion documentation set to the documentation application server before continuing (e.g., eForms and WCM) so you end up with one **ecm_help** directory containing multiple sets of functional expansion files added in.

4. Download the latest web-posted updates of installation and upgrade guide PDFs for the various functional expansion documentation (as well as IBM FileNet P8 Platform) to the **ecm_help/installation** directory.

5. Go on to the procedure in the following topic, "Update documentation search index" on page 83.

Update documentation search index

Perform this procedure only if you have refreshed the core IBM FileNet P8 Platform documentation, or installed functional expansion documentation onto your IBM FileNet P8 Platform documentation server. Otherwise, skip to the procedure in the following topic, "Complete and verify the documentation installation" on page 84.

NOTE Any time you update the documentation search index, a backup of the files in the existing **Index\core** directory will be automatically copied to the **Index\IndexOld** subdirectory. You can reapply these backed-up files to the **core** subdirectory (after first removing the new files created there) if you need to return to your previous indexed state.

To update the documentation search index

1. If the IBM FileNet P8 Platform documentation application is running, stop the application from the Administrative Console on the machine where the documentation is installed, and verify that no processes are accessing the documentation application.

   NOTE Make sure you have copied the help for all your various functional expansions to a designated application server location containing the IBM FileNet P8 Platform documentation. Otherwise, you will have to repeat this procedure if you add new help later.

2. Open a command prompt (or terminal) on the application server.

3. From the command prompt or terminal, navigate to the **search** subdirectory under your **ecm_help** root directory.

4. Using a text editor, open the search-indexing script file that is appropriate to your application server operating system.

    NOTE You may need to set the permissions on this file as it is set to read-only on the CD.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

5. If necessary, set the JAVA_HOME variable in the script file with the path to your JRE installation. The default examples are:

    (UNIX) JAVA_HOME="/usr/java/j2sdk1.4.1_02"

    (Windows) SET JAVA_HOME=c:\j2sdk1.4.2

    NOTE The Java^{TM} Run Time Environment (JRE) installation subdirectory can be user-defined, so substitute your actual location, as appropriate.

6. Save your changes and close the text editor.

    NOTE If you intend to run the search indexer on a UNIX application server, ensure that you add execute permissions (chmod 755) to the **indexFiles.sh** file.

7. Run the following updated search-indexing script file that is appropriate to your application server operating system.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

8. **NOTE** As you run the search-indexing script, you may notice periodic Parse Abort errors. You can ignore these error conditions, as they are benign and do not affect the overall indexing process.

9. Go on to the next procedure.

Complete and verify the documentation installation

Perform this procedure after you have installed (and, if necessary, reindexed) the IBM FileNet P8 Platform documentation on the application server.

To complete and verify the WebSphere documentation installation

1. Start the IBM FileNet P8 Platform documentation application from the Administrative Console.

2. Verify that the application server and the new IBM FileNet P8 Platform documentation web site are running, as follows:

    a. From your web browser, access the following URL. The documentation's Help Directory should open.

        http://<docserver>:<port#>/<contextRoot>/

    where:

        docserver is the name of the Java web server.

        port# is the port number (def: 9080).

contextRoot is the value of the Map to URL field that you specified when you deployed the IBM FileNet P8 Platform documentation application. If you specified **/ecm_help**, then the *contextRoot* is **ecm_help**.

Example: **http://yourdocserver:9080/ecm_help/**

NOTE You can use multi-part root folders (e.g., **/docs/ecm_help**) if your application server supports them.

b. Click the **Search** link on the Help Directory toolbar. The documentation Search page should open.

c. Select one of the Search query result links. The associated help page should open.

NOTE When it is time to configure the online help location for the various IBM FileNet P8 components, either while running Setup programs or later via site preferences settings, use the URL in .

Task 7b: Install IBM FileNet P8 Platform documentation (WebLogic)

This topic covers the installation, and (if necessary) search-related reindexing of your IBM FileNet P8 Platform documentation on a WebLogic application server. Because the IBM FileNet P8 Platform documentation includes a Java-based full-text search engine, it runs as a web-based application.

You must install the IBM FileNet P8 Platform documentation on a web application server if you intend to access online help from within any IBM FileNet P8 applications (for example, Workplace, Enterprise Manager, Process Task Manager, and Records Manager) or use the full-text search feature.

NOTES

- You may install the IBM FileNet P8 Platform documentation and Application Engine on the same machine.

- To ensure proper documentation search functionality, enable JavaScript support on the user's browser client.

- Because of the number of possible network and web configurations, contact your network or web administrator for specific system, software, and security requirements.

- The requirements described in this topic may also exist for associated custom application help, or for any customizations you may have applied to the IBM FileNet P8 Platform documentation. This documentation requirement may also exist for associated custom applications. For further details on customizing or localizing IBM FileNet P8 Platform documentation, see the file ecm_help/transkit/ P8DocTransKit.htm on the IBM FileNet P8 Platform Documentation CD or wherever you install the IBM FileNet P8 Platform documentation.

- If you are upgrading your IBM FileNet P8 Platform installation and have downloaded a refresh of the documentation from the IBM website support page, see "Upgrade IBM FileNet P8 Platform Documentation" on page 306 for instructions on upgrading the documentation.

- Under WebLogic, IBM FileNet P8 documentation must be installed and deployed as a flat-file directory (\ecm_help). You cannot deploy as a WAR file or EAR file because, in both cases, the IBM FileNet P8 help remains packaged and the internal documentation search engine will not function as expected.

- For WebLogic application server, you cannot directly deploy from the CD. Therefore, you must first copy the IBM FileNet P8 Platform documentation files from the CD to the PC where WebLogic is running, as described in this procedure.

Overview of procedures

Perform the procedures in the following subtopics in the order presented, unless otherwise directed below:

- "Install the IBM FileNet P8 Platform documentation" on page 87 -- Begin here if you are installing the IBM FileNet P8 Platform documentation for the first time.

- "Install functional expansion documentation" on page 88 -- Begin here if have already installed the IBM FileNet P8 Platform documentation and need to add on the documentation for IBM FileNet functional expansions (e.g., Process Analyzer, Process Simulator, IBM FileNet eForms, Content Federation Services for Image Services, Records Manager, Web Content Manager, Team Collaboration Manager, or IBM FileNet P8 Portlets).

- "Update the documentation search index" on page 89 -- Perform this procedure only after you have added on documentation for your functional expansions. Otherwise, if you install only IBM FileNet P8 Platform documentation, which has a baseline search index, you may skip this procedure.

- -- Perform this final procedure in all cases, but only after you have installed the IBM FileNet P8 Platform documentation, added on documentation for your functional expansions, and (where required) regenerated the search index.

Install the IBM FileNet P8 Platform documentation

This procedure establishes the web application for documentation associated with IBM FileNet P8 Platform. It assumes that your WebLogic application server is already installed and operational.

To install the IBM FileNet P8 Platform documentation

1. For WebLogic software version 7.0.x, perform the following steps. For other versions of the software, continue to Step 2.

    a. Make a backup copy of the startup script, open it in a text editor, and add the following JARs to the CLASSPATH statement.

    (UNIX) **startWLS.sh**

    - *<install_location>*/ecm_help/WEB-INF/lib/lucene-1.4.2.jar

    - *<install_location>*/ecm_help/WEB-INF/lib/lucene-demos-1.4.2.jar

    - *<install_location>*/ecm_help/WEB-INF/lib/filenet.jar

    (Windows) **startWLS.cmd**

    - *<install_location>*\ecm_help\WEB-INF\lib\lucene-1.4.2.jar

    - *<install_location>*\ecm_help\WEB-INF\lib\lucene-demos-1.4.2.jar

    - *<install_location>*\ecm_help\WEB-INF\lib\filenet.jar

    b. Save and close the **startWLS.sh** or **startWLS.cmd** file.

2. If this is a Windows server, verify that Microsoft Windows Internet Information Services (IIS Admin Service, Simple Mail Transport Protocol (SMTP), and World Wide Web Publishing Service) are stopped and set to *manual*.

    NOTE Skip this step if the application server will contain Content Engine software.

3. Insert or mount the *IBM FileNet P8 Platform Documentation* CD, as follows:

    (UNIX*)* Insert and mount the *IBM FileNet P8 Platform Documentation* CD.

    (Windows) Insert the *IBM FileNet P8 Platform Documentation* CD.

4. Copy the IBM FileNet P8 Platform documentation files from the CD to the computer where WebLogic application server is running. Note that the location you choose will be the directory from which WebLogic deploys the documentation application. If you later add functional expansion documentation, then you will perform that task from the deployment directory that you choose now.

    - If running WebLogic application server on a local PC, copy the expanded **ecm_help** directory structure from the CD to the PC.

    - If running WebLogic application server on a remote PC on the network, we recommend that you copy the **ecm_help.war** file from the CD to the PC, then extract the files to the **ecm_help** directory.

5. Deploy the IBM FileNet P8 Platform documentation application using the procedure applicable to your version of WebLogic.

WebLogic software version 7.0.x

a.   From the WebLogic Server Console, click *<mydomain>* > **Deployments** > **Web Application Modules**.

b.   Click **Configure a new Web Application Module**.

c.   From the right pane of the WebLogic Server Console, browse to and select **ecm_help**.

d.   Select *<myserver>* from Available Servers and click the right-arrow button so the *<myserver>* becomes the target server. Verify that the Application Name is ecm_help.

e.   Click **Configure and Deploy**.

WebLogic software version 8.1.x

a.   From the WebLogic Server Console, click *<mydomain>* > **Deployments** > **Web Application Modules**.

b.   Click **Deploy a new Web Application Module...**.

c.   From the right pane of the WebLogic Server Console, browse to and select the radio button for the **ecm_help** folder.

d.   Click **Target Module**.

e.   Click **Deploy**.

6.   Continue as follows:

- If you need to add on documentation for functional expansions, go on to the procedure in the following topic, "Install functional expansion documentation" on page 88.

- If you have no further documentation to install, then go on to the procedure in the topic "Complete and verify the documentation installation" on page 90.

Install functional expansion documentation

Use the procedure in this topic to install documentation for functional expansions into an existing IBM FileNet P8 Platform documentation application. If you have no such documentation to add on, skip to the procedure "Complete and verify the documentation installation" on page 90.

To install functional expansion documentation

1.   Determine the documentation media source or location:

- For most functional expansions, use the *Documentation CD* included as part of the particular software's CD set.

- For Content Federation Services for Image Services, use the **Documentation** directory on the software CD.

2.   Identify the directory where you deployed the IBM FileNet P8 Platform documentation application. This is the directory location where you copied the expanded **ecm_help**, or extracted **ecm_help.war** to the **ecm_help** directory.

3.   Stop the WebLogic server where you deployed the IBM FileNet P8 Platform documentation application.

4. Copy the functional expansion documentation to the IBM FileNet P8 Platform documentation application, as follows:

- (UNIX) When copying functional expansions, use a `cp` copy command from a terminal to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

  ```
  cp -r <mount_location> <target_destination>
  ```

  WARNING Care should be taken when copying folders in UNIX. Dropping-and-dragging of folders may replace any existing folder(s). Also note that your switch (`-r`) requirements may be different from the example shown. Contact your system administrator if you have questions about proper syntax.

- (Windows) Use a copy command from a command prompt or drop-and-drag the files to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

- (Content Federation Services for Image Services) Copy the **cfs_guide.pdf** from the **Documentation** directory on the software CD into the **ecm_help/cfs_help** directory on the IBM FileNet P8 Platform documentation server.

NOTE Repeat this step for each of your functional expansions. You can copy more than one functional expansion documentation set to the documentation application server before continuing (e.g., eForms and WCM) so you end up with one **ecm_help** directory containing multiple sets of functional expansion files added in.

5. Download the latest web-posted updates of installation and upgrade guide PDFs for the various functional expansion documentation (as well as IBM FileNet P8 Platform) to the **ecm_help/installation** directory.

6. Go on to the procedure in the following topic, "Update the documentation search index" on page 89.

Update the documentation search index

Perform this procedure only if you have refreshed the core IBM FileNet P8 Platform documentation, or installed functional expansion documentation onto your IBM FileNet P8 Platform documentation server. Otherwise, skip to the procedure in the following topic, "Complete and verify the documentation installation" on page 90.

NOTE Any time you update the documentation search index, a backup of the files in the existing **Index\core** directory will be automatically copied to the **Index\IndexOld** subdirectory. You can reapply these backed-up files to the **core** subdirectory (after first removing the new files created there) if you need to return to your previous indexed state.

To update the documentation search index

1. Make sure the WebLogic server where you deployed the IBM FileNet P8 Platform documentation application is stopped. For the search indexer to run, no other processes can be accessing the IBM FileNet P8 Platform documentation.

2. Open a command prompt or terminal on the application server.

3. From the command line, navigate to the **search** subdirectory under the application root directory, for example, **ecm_help**.

4. Using a text editor, open the search-indexing script file that is appropriate to your application server operating system.

    NOTE You may need to set the permissions on this file as it is set to read-only on the CD.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

5. If necessary, set the JAVA_HOME variable in the script file with the path to your JRE installation. The default examples are:

    (UNIX) JAVA_HOME="/usr/java/j2sdk1.4.1_02"

    (Windows) SET JAVA_HOME=c:\j2sdk1.4.2

    NOTE The Java JRE installation subdirectory can be user-defined, so substitute your actual location, as appropriate.

6. Save your changes and close the text editor.

    NOTE If you intend to run the search indexer on a UNIX application server, ensure that you add execute permissions (chmod 755) to the **indexFiles.sh** file.

7. Run the following updated search-indexing script file that is appropriate to your application server operating system.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

    NOTE As you run the search-indexing script, you may notice periodic Parse Abort errors. You can ignore these error conditions, as they are benign and do not affect the overall indexing process.

8. Go on to the next procedure.

Complete and verify the documentation installation

Perform this procedure after you have installed (and, if necessary, reindexed) the IBM FileNet P8 Platform documentation on the application server.

To complete and verify the documentation installation

1. If the WebLogic server where you deployed IBM FileNet P8 Platform documentation application is not running, start it.

2. Verify that the application server and the new IBM FileNet P8 Platform documentation web site are running, as follows:

    a. From your web browser, access the following URL. The documentation's Help Directory should open.

        http://<docserver>:<port#>/<contextRoot>/

    where:

        docserver is the name of the Java web server.

        port# is the port number (def: 7001).

contextRoot is the value of the Map to URL field that you specified when you deployed the IBM FileNet P8 Platform documentation application. If you specified **/ecm_help**, then the *contextRoot* is **ecm_help**.

Example: **http://yourdocserver:7001/ecm_help/**

NOTE You can use multi-part root folders (e.g., **/docs/ecm_help**) if your application server supports them.

b.   Click the **Search** link on the Help Directory toolbar. The documentation Search page should open.

c.   Select one of the Search query result links. The associated help page should open.

NOTE When it is time to configure the online help location for the various IBM FileNet P8 components, either while running Setup programs or later via site preferences settings, use the URL in

Task 7c: Install IBM FileNet P8 Platform documentation (JBoss)

This topic covers the installation, and (if necessary) search-related reindexing of your IBM FileNet P8 Platform documentation on a JBoss application server. Because the IBM FileNet P8 Platform documentation includes a Java-based full-text search engine, it runs as a web-based application.

You must install the IBM FileNet P8 Platform documentation on a web application server if you intend to access online help from within any IBM FileNet P8 applications (for example, Workplace, Enterprise Manager, Process Task Manager, and Records Manager) or use the full-text search feature.

NOTES

- You may install the IBM FileNet P8 Platform documentation and Application Engine on the same machine.

- A valid Java JSDK must be installed for the JBoss application server.

- To ensure proper documentation search functionality, enable JavaScript support on the user's browser client.

- Because of the number of possible network and web configurations, contact your network or web administrator for specific system, software, and security requirements.

- The requirements described in this topic may also exist for associated custom application help, or for any customizations you may have applied to the IBM FileNet P8 Platform documentation. This documentation requirement may also exist for associated custom applications. For further details on customizing or localizing IBM FileNet P8 Platform documentation, see the file ecm_help/transkit/ P8DocTransKit.htm on the IBM FileNet P8 Platform Documentation CD or wherever you install the IBM FileNet P8 Platform documentation.

- If you are upgrading your IBM FileNet P8 Platform installation and have downloaded a refresh of the documentation from the IBM website support page, see "Upgrade IBM FileNet P8 Platform Documentation" on page 306 for instructions on upgrading the documentation.

Overview of procedures

Perform the procedures in the following subtopics in the order presented, unless otherwise directed below:

- "Install the IBM FileNet P8 Platform documentation" on page 93 -- Begin here if you are installing the IBM FileNet P8 Platform documentation for the first time.

- "Install functional expansion documentation" on page 93 -- Begin here if have already installed the IBM FileNet P8 Platform documentation and need to add on the documentation for IBM FileNet functional expansions (e.g., Process Analyzer, Process Simulator, IBM FileNet eForms, Content Federation Services for Image Services, Records Manager, Web Content Manager, Team Collaboration Manager, or IBM FileNet P8 Portlets).

- "Update the documentation search index" on page 94 -- Perform this procedure only after you have added on documentation for your functional expansions. Otherwise, if you install only IBM FileNet P8 Platform documentation, which has a baseline search index, you may skip this procedure.

- "Complete and verify the documentation installation" on page 96 -- Perform this final procedure in all cases, but only after you have installed the IBM FileNet P8 Platform documentation, added on documentation for your functional expansions, and (where required) regenerated the search index.

Install the IBM FileNet P8 Platform documentation

This procedure establishes the web application for documentation associated with IBM FileNet P8 Platform. It assumes that your JBoss application server is already installed and operational.

To install the IBM FileNet P8 Platform documentation

1. If this is a Windows server, verify that Microsoft Windows Internet Information Services (IIS Admin Service, Simple Mail Transport Protocol (SMTP), and World Wide Web Publishing Service) are stopped and set to *manual*.

   NOTE Skip this step if the application server will contain Content Engine software.

2. Insert or mount the *IBM FileNet P8 Platform Documentation* CD, as follows:

   (UNIX*)* Insert and mount the *IBM FileNet P8 Platform Documentation* CD.

   (Windows) Insert the *IBM FileNet P8 Platform Documentation* CD.

3. Create a directory for the IBM FileNet P8 Platform documentation. For example:

   (UNIX) **/home/usr/apps/jboss_ver/server/default/deploy/P8_docs.war**

   (Windows) **C:\jboss-3.2.3\server\default\deploy\P8_docs.war**

   NOTES

   - The installation directory must have a **.war** extension as shown above.

   - The installation directory can be user-defined, so substitute your actual location for these commands.

4. Unpack the **ecm_help.war** file or copy the **ecm_help** directory contents to the directory you just created.

5. Continue as follows:

   - If you need to install documentation for functional expansions, go on to the procedure in the following topic, "Install functional expansion documentation" on page 93.

   - If you have no further documentation to install, go on to the procedure in the topic "Complete and verify the documentation installation" on page 96.

Install functional expansion documentation

Use the procedure in this topic to install documentation for functional expansions onto an existing IBM FileNet P8 Platform documentation server. If you have no such documentation to add on, skip to the procedure "Complete and verify the documentation installation" on page 96.

To install functional expansion documentation

1. Determine the functional expansion documentation media source or location:

   - For most functional expansions, use the *Documentation CD* included as part of the particular software's CD set.

   - For Content Federation Services for Image Services, use the **Documentation** directory on the software CD.

2. If the application server is running, use the following command to stop it on the machine where the documentation is installed, and verify that no processes are accessing the documentation web application:

    (UNIX) `<path>` `/shutdown.sh -S`

    (Windows) `<path>` `\shutdown.bat -S`

3. Copy the functional expansion documentation to IBM FileNet P8 Platform documentation server, as follows:

    *   (UNIX) When copying functional expansions, use a `cp` copy command from a terminal to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

        `cp -irv --reply=no <mount_location> <target_destination>`

        WARNING Care should be taken when copying folders in UNIX. Dropping-and-dragging of folders 'replaces' any existing folder(s). Also note that your switch (`-irv`) requirements may be different from the example shown. Contact your system administrator if you have questions about proper syntax.

    *   (Windows) Use a copy command from a command prompt or drop-and-drag the files to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

    *   (Content Federation Services for Image Services) Copy the **cfs_guide.pdf** from the **Documentation** directory on the software CD into the **ecm_help/cfs_help** directory deployed on the existing IBM FileNet P8 Platform documentation server.

    NOTE Repeat this step for each of your functional expansions or custom applications. You can copy more than one functional expansion documentation set to the documentation application server before continuing (e.g., eForms and WCM) so you end up with one **ecm_help** directory containing multiple sets of functional expansion files added in.

4. Download the latest web-posted updates of installation and upgrade guide PDFs for the various functional expansion documentation (as well as IBM FileNet P8 Platform) to the **ecm_help/ installation** directory.

5. Go on to the procedure in the following topic,

Update the documentation search index

Perform this procedure only if you have refreshed the core IBM FileNet P8 Platform documentation, or installed functional expansion documentation onto your IBM FileNet P8 Platform documentation server. Otherwise, skip to the procedure in the following topic,

NOTE Any time you update the documentation search index, a backup of the files in the existing **Index\core** directory will be automatically copied to the **Index\IndexOld** subdirectory. You can reapply these backed-up files to the **core** subdirectory (after first removing the new files created there) if you need to return to your previous indexed state.

To update the documentation search index

1. If the JBoss server is running, use the following command to stop it on the machine where the documentation is installed, and verify that no processes are accessing the documentation web application:

    (UNIX) `<path> /shutdown.sh -S`

    (Windows) `<path> \shutdown.bat -S`

    NOTE Make sure you have copied the help for all your various functional expansions to a designated application server location containing the IBM FileNet P8 Platform documentation. Otherwise, you will have to repeat this procedure if you add new help later.

2. Open a command prompt (or terminal) on the application server.

3. From the command prompt (or terminal), navigate to the **search** subdirectory under your **ecm_help** root directory.

4. Using a text editor, open the search-indexing script file that is appropriate to your application server operating system:

    NOTE You may need to set the permissions on this file as it is set to read-only on the CD.

    (UNIX) `indexFiles.sh`

    (Windows) `indexFiles.bat`

5. If necessary, set the `JAVA_HOME` variable in the script file with the path to your JRE installation. The default examples are:

    (UNIX) `JAVA_HOME="/usr/java/j2sdk1.4.1_02"`

    (Windows) `SET JAVA_HOME=c:\j2sdk1.4.2`

    NOTE The Java JRE installation subdirectory can be user-defined, so substitute your actual location, as appropriate.

6. Save your changes and close the text editor.

    NOTE If you intend to run the search indexer on a UNIX application server, ensure that you add execute permissions (chmod 755) to the **indexFiles.sh** file.

7. Run the following updated search-indexing script file that is appropriate to your application server operating system.

    (UNIX) `indexFiles.sh`

    (Windows) `indexFiles.bat`

    NOTE As you run the search-indexing script, you may notice periodic Parse Abort errors. You can ignore these error conditions, as they are benign and do not affect the overall indexing process.

8. Go on to the next procedure.

Complete and verify the documentation installation

Perform this procedure after you have installed (and, if necessary, reindexed) the IBM FileNet P8 Platform documentation on the application server.

To complete and verify the JBoss documentation installation

1. Start the IBM FileNet P8 Platform documentation web application by running the following JBoss command:

    (UNIX) `run.sh`

    (Windows) `run.bat`

2. Verify that the application server and the new IBM FileNet P8 Platform documentation web site are running, as follows:

    a. From your web browser, access the following URL. The documentation's Help Directory should open.

    > **http://<docserver>:<port#>/<contextRoot>/**

    where:

    > *docserver* is the name of the Java web server.

    > *port#* is the port number (def: 80).

    > *contextRoot* is the value of the Map to URL field that you specified when you deployed the IBM FileNet P8 Platform documentation application. If you specified **/ecm_help**, then the *contextRoot* is **ecm_help**.

    > Example: **http://yourdocserver:80/ecm_help/**

    > **NOTE** You can use multi-part root folders (e.g., **/docs/ecm_help**) if your application server supports them.

    b. Click the **Search** link on the Help Directory toolbar. The documentation Search page should open.

    c. Select one of the Search query result links. The associated help page should open.

    NOTE When it is time to configure the online help location for the various IBM FileNet P8 components, either while running Setup programs or later via site preferences settings, use the URL in .

Task 7d: Install IBM FileNet P8 Platform documentation (Tomcat)

This topic covers the installation, and (if necessary) search-related reindexing of your IBM FileNet P8 Platform documentation on a Tomcat application server. Because the IBM FileNet P8 Platform documentation includes a Java-based full-text search engine, it runs as a web-based application.

You must install the IBM FileNet P8 Platform documentation on a web application server if you intend to access online help from within any IBM FileNet P8 applications (for example, Workplace, Enterprise Manager, Process Task Manager, and Records Manager) or use the full-text search feature.

NOTES

- You may install the IBM FileNet P8 Platform documentation and Application Engine on the same machine.

- A valid Java Java^{TM} Software Development Kit (JSDK) must be installed for the Tomcat application server.

- To ensure proper documentation search functionality, enable JavaScript support on the user's browser client.

- Because of the number of possible network and web configurations, contact your network or web administrator for specific system, software, and security requirements.

- The requirements described in this topic may also exist for associated custom application help, or for any customizations you may have applied to the IBM FileNet P8 Platform documentation. This documentation requirement may also exist for associated custom applications. For further details on customizing or localizing IBM FileNet P8 Platform documentation, see the file ecm_help/transkit/ P8DocTransKit.htm on the IBM FileNet P8 Platform Documentation CD or wherever you install the IBM FileNet P8 Platform documentation.

- If you are upgrading your IBM FileNet P8 Platform installation and have downloaded a refresh of the documentation from the IBM website support page, see "Upgrade IBM FileNet P8 Platform Documentation" on page 306 for instructions on upgrading the documentation.

Overview of procedures

Perform the procedures in the following subtopics in the order presented, unless otherwise directed below:

- "Install IBM FileNet P8 Platform documentation" on page 98 -- Begin here if you are installing the IBM FileNet P8 Platform documentation for the first time.

- "Install functional expansion documentation" on page 98 -- Begin here if have already installed the IBM FileNet P8 Platform documentation and need to add on the documentation for IBM FileNet functional expansions (e.g., Process Analyzer, Process Simulator, IBM FileNet eForms, Content Federation Services for Image Services, Records Manager, Web Content Manager, Team Collaboration Manager, or IBM FileNet P8 Portlets).

- "Update the documentation search index" on page 99 -- Perform this procedure only after you have added on documentation for your functional expansions. Otherwise, if you install only IBM FileNet P8 Platform documentation, which has a baseline search index, you may skip this procedure.

- "Complete and verify the documentation installation" on page 101 -- Perform this final procedure in all cases, but only after you have installed the IBM FileNet P8 Platform documentation, added on documentation for your functional expansions, and (where required) regenerated the search index.

Install IBM FileNet P8 Platform documentation

This procedure establishes the web application for documentation associated with IBM FileNet P8 Platform. It assumes that your Tomcat application server is already installed and operational.

To install the IBM FileNet P8 Platform documentation

1. If this is a Windows server, verify that Microsoft Windows Internet Information Services (IIS Admin Service, Simple Mail Transport Protocol (SMTP), and World Wide Web Publishing Service) are stopped and set to *manual*.

    NOTE Skip this step if the application server will contain Content Engine software.

2. Insert or mount the *IBM FileNet P8 Platform Documentation* CD, as follows:

    (UNIX*)* Insert and mount the *IBM FileNet P8 Platform Documentation* CD.

    (Windows) Insert the *IBM FileNet P8 Platform Documentation* CD.

3. Create a directory for the IBM FileNet P8 Platform documentation. For example:

    (UNIX) **/export/home/apps/Tomcat_ver/webapps/ecm_help**

    (Windows) **C:\Program Files\Apache Software Foundation\Tomcat 5.0\webapps\P8_docs**

    NOTE The installation directory can be user-defined, so substitute your actual location, as appropriate.

4. Unpack the **ecm_help.war** file or copy the **ecm_help** directory contents to the directory you just created.

5. Continue as follows:

    *   If you need to add on documentation for functional expansions) go on to the procedure in the following topic, "Install functional expansion documentation" on page 98.

    *   If you have no further documentation to install, go on to the procedure in the topic "Complete and verify the documentation installation" on page 101.

Install functional expansion documentation

Use the procedure in this topic to install documentation for functional expansions onto an existing IBM FileNet P8 Platform documentation server. If you have no such documentation to add on, skip to the procedure "Complete and verify the documentation installation" on page 101.

To install functional expansion documentation

1. Determine the functional expansion documentation media source or location:

    *   For most functional expansions, use the *Documentation CD* included as part of the particular software's CD set.

    *   For Content Federation Services for Image Services, use the **Documentation** directory on the software CD.

2. If the application server is running, use the following command to stop it on the machine where the documentation is installed, and verify that no processes are accessing the documentation web application:

    (UNIX) **shutdown.sh**

    (Windows) **shutdown.bat**

3. Copy the functional expansion documentation to the IBM FileNet P8 Platform documentation server, as follows:

    •   (UNIX) When copying functional expansions, use a `cp` copy command from a terminal to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

        ```
        cp -R <mount_location> <target_destination>
        ```

        WARNING Care should be taken when copying folders in UNIX. Dropping-and-dragging of folders may replace any existing folder(s). Also note that your switch (`-r`) requirements may be different from the example shown. Contact your system administrator if you have questions about proper syntax.

    •   (Windows) Use a copy command from a command prompt or drop-and-drag the files to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

    •   (Content Federation Services for Image Services) Copy the **cfs_guide.pdf** from the **Documentation** directory on the software CD into the pre-existing **ecm_help/cfs_help** directory on the IBM FileNet P8 Platform documentation server.

    NOTE Repeat this step for each of your functional expansions. You can copy more than one functional expansion documentation set to the documentation application server before continuing (e.g., eForms and WCM) so you end up with one **ecm_help** directory containing multiple sets of functional expansion files added in.

4. Download the latest web-posted updates of installation and upgrade guide PDFs for the various functional expansion documentation (as well as IBM FileNet P8 Platform) to the **ecm_help/installation** directory.

5. Go on to the procedure in the following topic,

Update the documentation search index

Perform this procedure only if you have refreshed the core IBM FileNet P8 Platform documentation, or installed functional expansion documentation onto your IBM FileNet P8 Platform documentation server. Otherwise, skip to the procedure in the following topic,

NOTE Any time you update the documentation search index, a backup of the files in the existing **Index\core** directory will be automatically copied to the **Index\IndexOld** subdirectory. You can reapply these backed-up files to the **core** subdirectory (after first removing the new files created there) if you need to return to your previous indexed state.

To update the documentation search index

1. If the Tomcat server is running, use the following command to stop it on the machine where the documentation is installed, and verify that no processes are accessing the documentation web application:

    (UNIX) **shutdown.sh**

    (Windows) **shutdown.bat**

    NOTE Make sure you have copied the help for all your various functional expansions to a designated application server location containing the IBM FileNet P8 Platform documentation. Otherwise, you will have to repeat this procedure if you add new help later.

2. Open a command prompt (or terminal) on the application server.

3. From the command prompt or terminal, navigate to the **search** subdirectory under your **ecm_help** root directory.

4. Using a text editor, open the following search-indexing script file that is appropriate to your application server operating system:

    NOTE You may need to set the permissions on this file, as it is set to read-only on the CD.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

5. If necessary, set the JAVA_HOME variable in the **indexFiles** script file with the path to your JRE installation. The default examples are:

    (UNIX) JAVA_HOME="/usr/java/j2sdk1.4.1_02"

    (Windows) SET JAVA_HOME=c:\j2sdk1.4.2

    NOTE The Java JRE installation subdirectory can be user-defined, so substitute your actual location, as appropriate.

6. Save your changes and close the text editor.

    NOTE If you intend to run the search indexer on a UNIX application server, ensure that you add execute permissions (chmod 755) to the **indexFiles.sh** file.

7. Run the following updated search-indexing script file that is appropriate to your application server operating system.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

    NOTE As you run the search-indexing script, you may notice periodic Parse Abort errors. You can ignore these error conditions, as they are benign and do not affect the overall indexing process.

8. Go on to the next procedure.

Complete and verify the documentation installation

Perform this procedure after you have installed (and, if necessary, reindexed) the IBM FileNet P8 Platform documentation on the application server.

To complete and verify the documentation installation

1. Start the IBM FileNet P8 Platform documentation web application by running the following Tomcat command:

    (UNIX) **run.sh**

    (Windows) **run.bat**

2. Verify that the application server and the new IBM FileNet P8 Platform documentation web site are running, as follows:

    a. From your web browser, access the following URL. The documentation's Help Directory should open.

    http://*<docserver>*:*<port#>*/*<contextRoot>*/

    where:

    docserver is the name of the Java web server.

    port# is the port number (def: 80).

    contextRoot is the value of the Map to URL field that you specified when you deployed the IBM FileNet P8 Platform documentation application. If you specified **/ecm_help**, then the *contextRoot* is **ecm_help**.

    Example: **http://yourdocserver:80/ecm_help/**

    NOTE You can use multi-part root folders (e.g., **/docs/ecm_help**) if your application server supports them.

    b. Click the **Search** link on the Help Directory toolbar. The documentation Search page should open.

    c. Select one of the Search query result links. The associated help page should open.

    NOTE When it is time to configure the online help location for the various IBM FileNet P8 components, either while running Setup programs or later via site preferences settings, use the URL in Step a on page 101.

Task 7e: Install IBM FileNet P8 Platform documentation (Oracle Application Server)

This topic covers the installation, and (if necessary) search-related reindexing of your IBM FileNet P8 Platform documentation on an Oracle Application Server. Because the IBM FileNet P8 Platform documentation includes a Java-based full-text search engine, it runs as a web-based application.

You must install the IBM FileNet P8 Platform documentation on a web application server if you intend to access online help from within any IBM FileNet P8 applications (for example, Workplace, Enterprise Manager, Process Task Manager, and Records Manager) or use the full-text search feature.

NOTES

- You may install the IBM FileNet P8 Platform documentation and Application Engine on the same machine.

- To ensure proper documentation search functionality, enable JavaScript support on the user's browser client.

- Because of the number of possible network and web configurations, contact your network or web administrator for specific system, software, and security requirements.

- The requirements described in this topic may also exist for associated custom application help, or for any customizations you may have applied to the IBM FileNet P8 Platform documentation. This documentation requirement may also exist for associated custom applications. For further details on customizing or localizing IBM FileNet P8 Platform documentation, see the file ecm_help/transkit/ P8DocTransKit.htm on the IBM FileNet P8 Platform Documentation CD or wherever you install the IBM FileNet P8 Platform documentation.

- If you are upgrading your FileNet P8 Platform installation and have downloaded a refresh of the documentation from the IBM website support page, see "Upgrade IBM FileNet P8 Platform Documentation" on page 306 for instructions on upgrading the documentation.

Overview of procedures

Perform the procedures in the following subtopics in the order presented, unless otherwise directed below:

- "Install the IBM FileNet P8 Platform documentation" on page 103 -- Begin here if you are installing the IBM FileNet P8 Platform documentation for the first time.

- "Install functional expansion documentation" on page 104 -- Begin here if have already installed the IBM FileNet P8 Platform documentation and need to add on the documentation for IBM FileNet functional expansions (e.g., Process Analyzer, Process Simulator, IBM FileNet eForms, Content Federation Services for Image Services, Records Manager, Web Content Manager, Team Collaboration Manager, or IBM FileNet P8 Portlets).

- "Update the documentation search index" on page 105 -- Perform this procedure only after you have added on documentation for your functional expansions. Otherwise, if you install only IBM FileNet P8 Platform documentation, which has a baseline search index, you may skip this procedure.

- "Complete and verify the documentation installation" on page 106 -- Perform this final procedure in all cases, but only after you have installed the IBM FileNet P8 Platform documentation, added on documentation for your functional expansions, and (where required) regenerated the search index.

Install the IBM FileNet P8 Platform documentation

This procedure establishes the web application for documentation associated with IBM FileNet P8 Platform. It assumes that your Oracle Application Server is already installed and operational.

You can install the IBM FileNet P8 Platform documentation application directly from the *IBM FileNet P8 Platform Documentation* CD. However, if you are accessing your Oracle Application Server over a network, we recommend that you first copy the **ecm_help.war** file from the CD to the PC on which your application server is running. You would then deploy the IBM FileNet P8 Platform documentation from the PC.

To install the IBM FileNet P8 Platform documentation

1. If this is a Windows server, verify that Microsoft Windows Internet Information Services (IIS Admin Service, Simple Mail Transport Protocol (SMTP), and World Wide Web Publishing Service) are stopped and set to *manual*.

    NOTE Skip this step if the application server will contain Content Engine software.

2. Insert or mount the *IBM FileNet P8 Platform Documentation* CD, as follows:

    (UNIX*)* Insert and mount the *IBM FileNet P8 Platform Documentation* CD.

    (Windows) Insert the *IBM FileNet P8 Platform Documentation* CD.

3. Open the Oracle Enterprise Manager console.

4. Choose an OC4J instance in which to run the IBM FileNet P8 Platform documentation application.

5. Go to the Application page of the selected OC4J instance.

6. Click **Deploy WAR File**.

7. On the Deploy Web Application page, set the fields.

    •   In the Web Application field, specify the location of the **ecm_help.war** file.

    •   In the Map to URL field, enter a name by which the application will be invoked in the URL. For example, if you enter **/ecm_help**, the URL to the IBM FileNet P8 Platform documentation server will be **http://<host>:<port>/ecm_help**.

8. Click **Deploy**. If the application deploys successfully, click **OK** on the Confirmation page. The Applications page for the OC4J instance lists the IBM FileNet P8 Platform documentation application.

9. Continue as follows:

    •   If you need to add on documentation for functional expansions, go on to the procedure in the following topic, .

    •   If you have no further documentation to install, then start the IBM FileNet P8 Platform documentation application that you just deployed.

        On the Home page, select the OC4J instance to which you deployed the IBM FileNet P8 Platform documentation application, then click **Restart**. If restart is successful, you will get a confirmation page. Go on to the procedure in the topic .

Install functional expansion documentation

Use the procedure in this topic to install documentation for functional expansions into an existing IBM FileNet P8 Platform documentation application. If you have no such documentation to add on, skip to the procedure "Complete and verify the documentation installation" on page 106.

To install functional expansion documentation

1. Determine the documentation media source or location:

    *   For most functional expansions, use the *Documentation CD* included as part of the particular software's CD set.

    *   For Content Federation Services for Image Services, use the **Documentation** directory on the software CD.

2. Identify the directory where you deployed the IBM FileNet P8 Platform documentation application.

    Oracle deploys applications in the directory structure of the application's OC4J instance, for example, **/OraHome_1/j2ee/< *OC4J instance*>/applications/ecm_help/ecm_help**.

3. Stop the OC4J instance where you deployed the IBM FileNet P8 Platform documentation application.

    On the Home page, select the OC4J instance to which you deployed the documentation application, then click **Stop**.

4. Copy the functional expansion documentation to the IBM FileNet P8 Platform documentation application, as follows:

    *   (UNIX) When copying functional expansions, use a `cp` copy command from a terminal to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

        ```
        cp -r <mount_location> <target_destination>
        ```

        WARNING Care should be taken when copying folders in UNIX. Dropping-and-dragging of folders may replace any existing folder(s). Also note that your switch (`-r`) requirements may be different from the example shown. Contact your system administrator if you have questions about proper syntax.

    *   (Windows) Use a copy command from a command prompt or drop-and-drag the files to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

    *   (Content Federation Services for Image Services) Copy the **cfs_guide.pdf** from the **Documentation** directory on the software CD into the **ecm_help/cfs_help** directory on the IBM FileNet P8 Platform documentation server.

    NOTE Repeat this step for each of your functional expansions. You can copy more than one functional expansion documentation set to the documentation application server before continuing (e.g., eForms and WCM) so you end up with one **ecm_help** directory containing multiple sets of functional expansion files added in.

5. Download the latest web-posted updates of installation and upgrade guide PDFs for the various functional expansion documentation (as well as IBM FileNet P8 Platform) to the **ecm_help/installation** directory.

6. Go on to the procedure in the following topic, "Update the documentation search index" on page 105.

Update the documentation search index

Perform this procedure only if you have refreshed the core IBM FileNet P8 Platform documentation, or installed functional expansion documentation onto your IBM FileNet P8 Platform documentation server. Otherwise, skip to the procedure in the following topic, "Complete and verify the documentation installation" on page 106.

NOTE Any time you update the documentation search index, a backup of the files in the existing **Index\core** directory will be automatically copied to the **Index\IndexOld** subdirectory. You can reapply these backed-up files to the **core** subdirectory (after first removing the new files created there) if you need to return to your previous indexed state.

To update the documentation search index

1. Make sure the OC4J instance where you deployed the IBM FileNet P8 Platform documentation application is stopped. For the search indexer to run, no other processes can be accessing the IBM FileNet P8 Platform documentation.

2. Open a command prompt or terminal on the application server.

3. From the command line, navigate to the **search** subdirectory under the application root directory, for example, **ecm_help**.

4. Using a text editor, open the search-indexing script file that is appropriate to your application server operating system:

    NOTE You may need to set the permissions on this file, as it is set to read-only on the CD.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

5. If necessary, set the `JAVA_HOME` variable in the script file with the path to your JRE installation. The default examples are:

    (UNIX) `JAVA_HOME="/usr/java/j2sdk1.4.1_02"`

    (Windows) `SET JAVA_HOME=c:\j2sdk1.4.2`

    NOTE The Java JRE installation subdirectory can be user-defined, so substitute your actual location, as appropriate.

6. Save your changes and close the text editor.

    NOTE If you intend to run the search indexer on a UNIX application server, ensure that you add execute permissions (chmod 755) to the **indexFiles.sh** file.

7. Run the following updated search-indexing script file that is appropriate to your application server operating system.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

    NOTE As you run the search-indexing script, you may notice periodic Parse Abort errors. You can ignore these error conditions, as they are benign and do not affect the overall indexing process.

8. Go on to the next procedure.

Complete and verify the documentation installation

Perform this procedure after you have installed (and, if necessary, reindexed) the IBM FileNet P8 Platform documentation on the application server.

To complete and verify the documentation installation

1. If the IBM FileNet P8 Platform documentation application is not running, start it.

    On the Home page, select the OC4J instance to which you deployed the IBM FileNet P8 Platform documentation application, then click **Start**. If startup is successful, you will get a confirmation page.

2. Verify that the application server and the new IBM FileNet P8 Platform documentation web site are running, as follows:

    a. From your web browser, access the following URL. The documentation's Help Directory should open.

      http://<docserver>:<port#>/<contextRoot>/

    where:

    > *docserver* is the name of the Java web server.

    > *port#* is the port number (def: 80).

    > *contextRoot* is the value of the Map to URL field that you specified when you deployed the IBM FileNet P8 Platform documentation application. If you specified **/ecm_help**, then the *contextRoot* is **ecm_help**.

    > Example: **http://yourdocserver:80/ecm_help/**

    > **NOTE** You can use multi-part root folders (e.g., **/docs/ecm_help**) if your application server supports them.

    b. Click the **Search** link on the Help Directory toolbar. The documentation Search page should open.

    c. Select one of the Search query result links. The associated help page should open.

    NOTE When it is time to configure the online help location for the various IBM FileNet P8 components, either while running Setup programs or later via site preferences settings, use the URL in .

Task 7f: Install IBM FileNet P8 Platform documentation (Sun Java Application Server)

This topic covers the installation, and (if necessary) search-related reindexing of your IBM FileNet P8 Platform documentation on a Sun Java Application Server. Because the IBM FileNet P8 Platform documentation includes a Java-based full-text search engine, it runs as a web-based application.

You must install the IBM FileNet P8 Platform documentation on a web application server if you intend to access online help from within any IBM FileNet P8 applications (for example, Workplace, Enterprise Manager, Process Task Manager, and Records Manager) or use the full-text search feature.

NOTES

- You may install the IBM FileNet P8 Platform documentation and Application Engine on the same machine.

- To ensure proper documentation search functionality, enable JavaScript support on the user's browser client.

- Because of the number of possible network and web configurations, contact your network or web administrator for specific system, software, and security requirements.

- The requirements described in this topic may also exist for associated custom application help, or for any customizations you may have applied to the IBM FileNet P8 Platform documentation. This documentation requirement may also exist for associated custom applications. For further details on customizing or localizing IBM FileNet P8 Platform documentation, see the file ecm_help/transkit/ P8DocTransKit.htm on the IBM FileNet P8 Platform Documentation CD or wherever you install the IBM FileNet P8 Platform documentation.

- If you are upgrading your IBM FileNet P8 Platform installation and have downloaded a refresh of the documentation from the IBM website support page, see "Upgrade IBM FileNet P8 Platform Documentation" on page 306 for instructions on upgrading the documentation.

Overview of procedures

Perform the procedures in the following subtopics in the order presented, unless otherwise directed below:

- "Install the IBM FileNet P8 Platform documentation" on page 108 -- Begin here if you are installing the IBM FileNet P8 Platform documentation for the first time.

- "Install functional expansion documentation" on page 108 -- Begin here if have already installed the IBM FileNet P8 Platform documentation and need to add on the documentation for IBM FileNet functional expansions (e.g., Process Analyzer, Process Simulator, IBM FileNet eForms, Content Federation Services for Image Services, Records Manager, Web Content Manager, Team Collaboration Manager, or IBM FileNet P8 Portlets).

- "Update the documentation search index" on page 110 -- Perform this procedure only after you have added on documentation for your functional expansions. Otherwise, if you install only IBM FileNet P8 Platform documentation, which has a baseline search index, you may skip this procedure.

- "Complete and verify the documentation installation" on page 111 -- Perform this final procedure in all cases, but only after you have installed the IBM FileNet P8 Platform documentation, added on documentation for your functional expansions, and (where required) regenerated the search index.

Install the IBM FileNet P8 Platform documentation

This procedure establishes the web application for documentation associated with IBM FileNet P8 Platform. It assumes that your Sun Java Application Server is already installed and operational.

You can install the IBM FileNet P8 Platform documentation application from the **ecm_help.war** file or from the expanded directory, both of which are on the *IBM FileNet P8 Platform Documentation* CD. This procedure shows you how to deploy from the **ecm_help.war** file.

If you are accessing your Sun Java Application Server over a network, we recommend that you first copy the **ecm_help.war** file from the CD to the PC on which your application server is running. You would then deploy the IBM FileNet P8 Platform documentation from the PC.

To install the IBM FileNet P8 Platform documentation

1. If this is a Windows server, verify that Microsoft Windows Internet Information Services (IIS Admin Service, Simple Mail Transport Protocol (SMTP), and World Wide Web Publishing Service) are stopped and set to *manual*.

    NOTE Skip this step if the application server will contain Content Engine software.

2. Insert or mount the *IBM FileNet P8 Platform Documentation* CD, as follows:

    (UNIX*)* Insert and mount the *IBM FileNet P8 Platform Documentation* CD.

    (Windows) Insert the *IBM FileNet P8 Platform Documentation* CD.

3. Open the Sun Java Application Server Admin Console.

4. From the console, navigate to **Application Server > Applications > Web Applications**.

5. In the right pane, click **Deploy**.

6. On the Deployment page, browse to and select the **ecm_help.war** file, then click **Next**.

7. On the Deploy Web Module page, set the Context Root field. Enter a name by which the application will be invoked in the URL. For example, if you enter **/ecm_help**, the URL to the IBM FileNet P8 Platform documentation server will be **http://<*host*>:<*port*>/ecm_help**.

8. Click **Finish** to deploy the application.

9. Continue as follows:

    -   If you need to add on documentation for functional expansions, go on to the procedure in the following topic, .

    -   If you have no further documentation to install, then start the IBM FileNet P8 Platform documentation application that you just deployed.

        On the Web Applications page, if the Enabled field is set to `true`, then the IBM FileNet P8 Platform documentation application is already running. If the Enabled field is set to `false`, then select the IBM FileNet P8 Platform documentation application check box and click **Enable**. Go on to the procedure in the topic .

Install functional expansion documentation

Use the procedure in this topic to install documentation for functional expansions into an existing IBM FileNet P8 Platform documentation application. If you have no such documentation to add on, skip to the procedure .

To install functional expansion documentation

1. Determine the documentation media source or location:

    *   For most functional expansions, use the *Documentation CD* included as part of the particular software's CD set.

    *   For Content Federation Services for Image Services, use the **Documentation** directory on the software CD.

2. Identify the directory where you deployed the IBM FileNet P8 Platform documentation application.

    From the Sun Java Application Server Admin Console, navigate to **Application Server > Applications > Web Applications**, and click the name of the IBM FileNet P8 Platform documentation application. The absolute directory of the IBM FileNet P8 Platform documentation application is displayed in the Location field. This is the directory that you will work with to install functional expansion documentation.

3. Stop the domain where you deployed the IBM FileNet P8 Platform documentation application. From the command line, enter the following command:

    ```
    asadmin stop-domain <domain>
    ```

    For example, if the application is deployed to the default domain, then you would specify `domain1`.

4. Copy the functional expansion documentation to the IBM FileNet P8 Platform documentation application, as follows:

    *   (UNIX) When copying functional expansions, use a `cp` copy command from a terminal to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

        ```
        cp -r <mount_location> <target_destination>
        ```

        WARNING Care should be taken when copying folders in UNIX. Dropping-and-dragging of folders may replace any existing folder(s). Also note that your switch (`-r`) requirements may be different from the example shown. Contact your system administrator if you have questions about proper syntax.

    *   (Windows) Use a copy command from a command prompt or drop-and-drag the files to copy the **ecm_help** directory structure from the associated *Documentation* CD over the **ecm_help** directory installed on the existing IBM FileNet P8 Platform documentation server.

    *   (Content Federation Services for Image Services) Copy the **cfs_guide.pdf** from the **Documentation** directory on the software CD into the **ecm_help/cfs_help** directory on the IBM FileNet P8 Platform documentation server.

    NOTE Repeat this step for each of your functional expansions. You can copy more than one functional expansion documentation set to the documentation application server before continuing (e.g., eForms and WCM) so you end up with one **ecm_help** directory containing multiple sets of functional expansion files added in.

5. Download the latest web-posted updates of installation and upgrade guide PDFs for the various functional expansion documentation (as well as IBM FileNet P8 Platform) to the **ecm_help/ installation** directory.

6. Go on to the procedure in the following topic,

Update the documentation search index

Perform this procedure only if you have refreshed the core IBM FileNet P8 Platform documentation, or installed functional expansion documentation onto your IBM FileNet P8 Platform documentation server. Otherwise, skip to the procedure in the following topic, "Complete and verify the documentation installation" on page 111.

NOTE Any time you update the documentation search index, a backup of the files in the existing **Index\core** directory will be automatically copied to the **Index\IndexOld** subdirectory. You can reapply these backed-up files to the **core** subdirectory (after first removing the new files created there) if you need to return to your previous indexed state.

To update the documentation search index

1. Make sure the domain where you deployed the IBM FileNet P8 Platform documentation application is stopped. For the search indexer to run, no other processes can be accessing the IBM FileNet P8 Platform documentation.

2. Open a command prompt or terminal on the application server.

3. From the command line, navigate to the **search** subdirectory under the application root directory, for example, **ecm_help**.

4. Using a text editor, open the search-indexing script file that is appropriate to your application server operating system:

    NOTE You may need to set the permissions on this file as it is set to read-only on the CD.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

5. If necessary, set the JAVA_HOME variable in the script file with the path to your JRE installation. The default examples are:

    (UNIX) JAVA_HOME="/usr/java/j2sdk1.4.1_02"

    (Windows) SET JAVA_HOME=c:\j2sdk1.4.2

    NOTE The Java JRE installation subdirectory can be user-defined, so substitute your actual location, as appropriate.

6. Save your changes and close the text editor.

    NOTE If you intend to run the search indexer on a UNIX application server, ensure that you add execute permissions (chmod 755) to the **indexFiles.sh** file.

7. Run the following updated search-indexing script file that is appropriate to your application server operating system.

    (UNIX) **indexFiles.sh**

    (Windows) **indexFiles.bat**

    NOTE As you run the search-indexing script, you may notice periodic Parse Abort errors. You can ignore these error conditions, as they are benign and do not affect the overall indexing process.

8. Go on to the next procedure.

Complete and verify the documentation installation

Perform this procedure after you have installed (and, if necessary, reindexed) the IBM FileNet P8 Platform documentation on the application server.

To complete and verify the documentation installation

1. If the IBM FileNet P8 Platform documentation application is not running, start it.

   From the Sun Java Application Server Admin Console, navigate to **Application Server > Applications > Web Applications**. Select the IBM FileNet P8 Platform documentation application check box and click **Enable**.

2. Verify that the application server and the new IBM FileNet P8 Platform documentation web site are running, as follows:

   a. From your web browser, access the following URL. The documentation's Help Directory should open.

      http://<docserver>:<port#>/<contextRoot>/

      where:

      docserver is the name of the Java web server.

      port# is the port number (def: 80).

      contextRoot is the value of the Map to URL field that you specified when you deployed the IBM FileNet P8 Platform documentation application. If you specified **/ecm_help**, then the **contextRoot** is **ecm_help**.

      Example: **http://yourdocserver:80/ecm_help/**

      NOTE You can use multi-part root folders (e.g., **/docs/ecm_help**) if your application server supports them.

   b. Click the **Search** link on the Help Directory toolbar. The documentation Search page should open.

   c. Select one of the Search query result links. The associated help page should open.

   NOTE When it is time to configure the online help location for the various IBM FileNet P8 components, either while running Setup programs or later via site preferences settings, use the URL in .

Task 8a: Install Content Engine (Typical)

A *Typical* setup installs all of the following Content Engine program features:

- Object Store Service

- Content Cache Service

- Process Services Administrator (included in Object Store Service)

- File Store Service

- Administrative Tools (IBM FileNet Enterprise Manager)

- Debug Tools

- Content Engine WebDAV Provider

- IBM FileNet P8 Client Connectivity

- Publishing Foundation (Publishing Plug-in)

- Application Engine Web Connectivity (Java)

- Content Engine COM SDK

- IBM FileNet P8 Content Federation Services (CFS) Server for Image Services

The Typical setup option does not install IBM FileNet P8 Content Federation Services Server for Image Services (CFS-IS). If you want to install CFS-IS, and/or a subset of these Content Engine features, refer instead to .

NOTE If you are installing Content Engine WebDAV provider, you must have Microsoft Internet Information Server (IIS) installed.

Deployment and authentication notes

- Some anti-virus software can cause problems with Content Engine installation. If you experience problems, disable your anti-virus software and try again.

- Even if you don't use Windows Active Directory as your authentication provider, you still need to have it installed since Content Engine installation requires it, and the Windows Content Engine Service and COM Application user both require a Windows Active Directory user to run them.

- The server where you run a Typical type of Content Engine setup must be a member of the "deployment" Windows domain (whether that be the parent or child domain) prior to running Content Engine Setup wizard.

- The Content Engine setup will allow you to create or join a FileNet P8 domain during a Typical setup. You must *create* a FileNet P8 domain if you are installing Content Engine for the first time.

- The DefaultRealm value you specify during Content Engine installation should be the same as the User and Group Base value you specify (via Process Task Manager) to control user access to Process Engine.

- For logging purposes, grant these users write access to winnt\temp (for Windows 2000) or windows\temp (for Windows 2003): P8Apache (CatClient), fnce_*<server>* (catalog), Administrators (installer). Your environment may require write access for additional users.

Third-party software notes

• If the Apache HTTP Server components are not installed on the machine, you will be prompted to install them. Follow the Apache setup screen prompts.

• **WARNING** The Apache HTTP Server is installed for IBM FileNet P8 client connectivity for Content Engine. By default, the Apache HTTP Server will be configured to use port 8008 for the installation. You can change this port assignment during setup. You should be aware of port assignments on your server. A conflict could arise if other programs are using port 8008.

• If the Microsoft Data Access Components (MDAC) is not set up on the machine, it will be installed without user intervention during Content Engine installation. If an earlier version of MDAC is installed, it will be overwritten.

Feature component notes

• File stores: A Typical type of Content Engine install on a server includes installation of File Store Service. If you do not intend to create or use file stores on this server, IBM recommends that you disable the File Store Service on the server. This assumes you will install a File Store Service on a remote file store server and disable all other features there.

• You can use IBM FileNet Enterprise Manager to administer multiple object stores in a single FileNet P8 domain. To administer multiple FileNet P8 domains from a single client machine, you must install Terminal Server on at least one machine in each domain. This machine should have IBM FileNet Enterprise Manager installed and configured for that domain. From your single client machine, you can connect to each machine using Terminal Server and use IBM FileNet Enterprise Manager to administer that specific domain. However, be aware that you cannot install Process Engine on a machine where Terminal Server is installed.

• Documentation: Identify the URL for the IBM FileNet P8 Platform documentation website that is described in "Install FileNet P8 Platform documentation" on page 57. You will need this value to configure the Content Engine documentation setting. If you do not provide a documentation URL, the installer will place an empty icon on the system desktop. You can change this setting later in the IBM FileNet Enterprise Manager, in which case the system also updates the documentation URL icon.

• When the Content Engine Setup wizard installs Object Store Service, it also installs Content Cache Service. When installed, Object Store Service uses this local Content Cache Service as its content cache. To take advantage of the local content cache, it is recommended that you install your cache client applications (such as Workplace, Team Collaboration Management, etc.) on a machine at the same site (local area network or geographic location) where an Object Store Service is installed.

• WebDAV: Microsoft Windows 2000 or 2003 Internet Information Server (IIS) is required for WebDAV support. You will be prompted for a valid Windows account and password.

• CFS-IS: If you previously installed CFS-IS on another machine in your FileNet P8 domain, then the Content Engine install you are about to do on this machine cannot be a Typical install. You must instead do a Custom install (see "Install Content Engine (Custom)" on page 127), which must include CFS-IS. Otherwise, you won't be able to work with an object store on this machine that uses an Image Services server as a fixed content device.

• Feature AddOns: While installing Content Engine, you have the option of installing feature AddOns. A feature AddOn consists of custom implementations of classes, objects, and properties that support specific product functionality, such as publishing, searching, email, and IBM FileNet eForms. For

detailed information about standard AddOns and possible custom AddOns, refer to the following topics in the IBM FileNet P8 Online Help:

– FileNet P8 Administration > Content Engine Administration > Feature AddOns > FileNet P8 Core Feature AddOns

– FileNet P8 Administration > Content Engine Administration > View/modify P8 domain properties > XML Import dialog box (AddOn Configuration tab)

– FileNet P8 Administration > Content Engine Administration > FileNet P8 Domain > View/modify P8 domain properties > FileNet P8 domain root properties (Import AddOns tab)

To install Content Engine using the Typical option

WARNING Do not rename any server after installing the Object Store Service, File Store Service, or Content Cache Service. If you need to rename a server, do so before installing Content Engine software.

1. Log on to the Windows server as an Active Directory domain user who is also a local administrator. You may need to be a Domain Account Operator or higher, depending on which option you choose when specifying the Windows service user to run the Content Engine services:

   • If you allow Content Engine Setup to use an existing domain group and user account for the Content Engine Servers group role and FNCE_*<machinename>* user role respectively, you do not need Domain Account Operator privileges if you specify an existing user account and password.

   • If you allow Content Engine Setup to create a new domain group and user account, Content Engine Servers and FNCE_*<machinename>* respectively, you need Domain Account Operator or higher privileges; and you'll need to assign a new password to this account.

2. Insert the *IBM FileNet P8 Content Engine* CD into the CD-ROM drive, navigate to the **ContentEngine** folder, and click **setup.exe**. The Content Engine Setup wizard opens.

   NOTE You can click **Back** at any time during the installation process to make changes in any previous wizard screen.

3. Complete the Setup screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the Content Engine installation.
License Agreement	Review and accept the license agreement for FileNet P8 software products, and then click **Next**.
Minimum Requirement	This screen appears only if the server where you are installing Content Engine software does not meet the suggested minimum system requirements posted in the FileNet P8 Hardware and Software Requirements on the FileNet Customer Service and Support web site (http://www.css.filenet.com). Click **Next** if you wish to proceed with the installation, but be aware that performance will be impacted. Or click **Cancel** to exit the wizard.
Customer Information	Type your user name (required) and organization (optional). Accept or change the default install log location, and then click **Next**.
Setup Type	Click **Typical**, accept or change the default install log location, and then click **Next**.

In this screen...	Perform this action...
WebDAV Configuration	Type a valid Windows domain account and password (for example, WinOSDomain\Account_name) to use for WebDAV extension authentication. Then click **Next**. **NOTE** This account is used for Microsoft Internet Information Server (IIS) logon authentication (not for Content Engine or object stores).
Install third-party software	This screen appears only if you have not already installed third-party software required by Content Engine: MDAC and Apache HTTP Server. **NOTE** If you don't want to install the required third-party software at this time, but would rather install it yourself manually, click **Cancel** to stop the Content Engine Setup wizard. If prompted to install third-party software, do the following: a. Click **Next**. b. Follow all screen prompts. In most environments, you can accept the default installation values for third-party software unless otherwise noted.

Ready to Install	Do the following:
	
	a. If you already have a FileNet P8 Documentation web site installed, you can configure Content Engine components to access it, as follows.
	
	NOTE If you don't yet have a documentation web site installed, see "Feature component notes" on page 113.
	
	   i. Select the provided check box.
	
	   ii. Type the URL of the web site in the following format:
	
	     http://<*docserver*>:<*port#*>/<*ecm_help*>)
	
	     where:
	
	     docserver is the name of the Java web server
	
	     port# is the port number
	
	     ecm_help is the root folder of the documentation website
	
	     You can use multipart root folders if your application server supports them (e.g., **/docs/ecm_help**).
	
	   iii. Click **Test** to verify that the browser opens at the documentation URL. Then exit the browser.
	
	b. Click **Install** to install Content Engine. (The installation will take several minutes.)

In this screen...	Perform this action...
Completing the Content Engine Setup wizard	Click **Finish**. This action completes the installation of Content Engine software and opens the GCD wizard to enable you to create a new, or join an existing, FileNet P8 domain.
	NOTE If the GCD wizard does not start automatically, navigate to **<*drive*>\Program Files\FileNet\Content Engine** and double-click **ConfigGCD.exe** to manually start it.
	Continue at "To create or join a FileNet P8 domain" on page 116

To create or join a FileNet P8 domain

Determine whether you want to create or join a FileNet P8 domain as follows:

1. If you are currently installing initial Content Engine components (e.g., the initial Object Store Service) on the first server, which will become the IBM FileNet P8 master Global Configuration Data (GCD) server, continue at "To create a FileNet P8 domain" on page 117.

2. If you are currently installing subsequent Content Engine components (e.g., a second Object Store Service on another IBM FileNet P8 member server), and want to join an existing FileNet P8 domain, continue at "To join a FileNet P8 domain" on page 125.

   To join a FileNet P8 domain, you will be asked to enter the name of a server where Content Engine Object Store Service in that FileNet P8 domain is installed.

If an error occurs, or if you have to click **Cancel,** while the GCD wizard is running, the wizard will attempt to roll back any changes it has made since being started. (Rollback includes deletion of services, Windows registry keys, the GCD **sysinit** folder, etc.) With successful automatic rollback, you do not need to do any manual cleanup. Simply re-run the wizard (e.g., after fixing the underlying problem that caused it to fail).

Click **OK** if you see an error message stating that the **msdaora.dll** file may not have been installed or is corrupt. This is a Microsoft-generated message and does not impact Content Engine installation.

To create a FileNet P8 domain

1. Complete the initial GCD wizard screens as follows:

In this screen...	Perform this action...
P8 Domain	Click **Create New Domain** and then click **Next**.
P8 Domain Service Account	Do the following: a. Create a new, or assign an existing, Windows Active Directory account to run the Content Engine services on this machine by doing one of the following: • Select the check box to accept the default account information for the FileNet P8 Domain Content Engine Servers group (such as *Content Engine Servers*) and a Windows service logon account (such as FNCE_<*machinename*>) that is a member of the group. These accounts will be created if they do not already exist. • Clear the check box, type an existing group name, click **List Members**, and select from the list a Windows service logon account. The group must exist in the authentication domain in which you're installing Content Engine. Also, if the group you select is a domain local or a universal group, its members must also be in the Content Engine's authentication domain. b. Type a password for the Windows service logon account, which will override any password previously supplied to the account. c. Click **Next**.

In this screen...	Perform this action...
Configure Authentication Provider	Do the following:
	a. Accept the default SYSINIT path (for example, **C:\Program Files\FileNet\Content Engine\sysconfig\sysinit**, or click **Edit** to locate a valid folder for the **sysinit.dat** file. Click **Reset** if you have changed the path and want to restore its default.
	If you don't accept the default SYSINIT, be sure that the folder you choose is a shared folder with these permissions:
	• Full Control for the group defined as Content Engine Servers
	• Full Control for all Windows administrative users/groups that will directly maintain files (i.e., do backups and restores)
	And be sure the share itself has one of the following permissions:
	• Full Control for the Authenticated Users group (restrictive permissions on the folder will keep out unauthorized users)
	• Full Control for Content Engine Servers and Windows administrative users/groups
	b. Select an authentication provider from the provided list:
	• Windows Integrated
	• Sun Java System Directory
	• eDirectory (Novell)
	c. Continue at Step 2 on page 118 for instructions on specifying all other information in the screen.

2. Specify attribute values for your particular authentication provider as follows.

For your choice of authentication provider, the Configure Authentication Provider screen shows an associated table of color-coded attribute names and values. You cannot directly supply values for red attributes, which instead are automatically set based on earlier input or associated entries on this screen. However, you must supply values directly for all blue attributes, some of which have modifiable default values.

Windows Integrated (Active Directory)

In this screen...	Perform this action...
Configure Authentication Provider	Specify values for the following attributes. For more information on the attributes, click **Help** on the Configure Authentication Provider screen, or refer to "Configuring the connection to the Content Engine" in the IBM FileNet P8 documentation topic FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Windows Active Directory.
	DefaultRealm The name of a Windows domain where user accounts reside. The name should be the same as the User and Group Base value you specify (via Process Task Manager) to control user access to Process Engine.
	UserDisplayNameAttribute (Default: samAccountName) A display name for a user object generated by the authentication provider.
	GroupDisplayNameAttribute (Default: samAccountName) A display name for a group object generated by the authentication provider.
	After you have specified the required authentication attribute values, click **Next** and continue at Step 3 on page 123.

Sun Java System Directory Server

In this screen...	Perform this action...
Configure Authentication Provider	Specify values for the following attributes. For more information on the attributes, click **Help** on the Configure Authentication Provider screen, or refer to "Configuring the connection to the Content Engine" in the IBM FileNet P8 documentation topic FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Sun Java System Directory Server.
	Host Specify a fully qualified domain name, not an IP address, of the directory server host. Use the DNS server or a hosts file entry (on the Content Engine server) to resolve the host name of the authentication provider. **WARNING** Do not alter the Host value after Content Engine installation is complete.

In this screen...	Perform this action...
	Port (Default: 389)
	The port number of the directory service. Choose the port number on the directory server that matches the EnableSSL attribute value.
	WARNING Do not alter the port number after Content Engine installation is complete.
	EnableSSL (Default: 0 = False)
	If EnableSSL is 1, the directory service will use an SSL connection.
	If EnableSSL is 0, the directory service will use a non-SSL connection.
	ChaseReferrals (Default: 0 = False)
	If ChaseReferrals is 1, the directory service will allow logons by users it finds via directory referrals, and directory searches will return users and groups accessible via referrals.
	DefaultRealm (Default: No value)
	The DefaultRealm value you specify is listed first in the realms collection returned by the directory service (e.g., dc=mydomain, dc=com). The value should be the same as the User and Group Base value you specify (via Process Task Manager) to control user access to Process Engine.
	Required only if RestrictToDefaultRealm is 1 (True). Otherwise optional.
	RestrictToDefaultRealm (Default: 0 = Off)
	If RestrictToDefaultRealm = 1 (On), DefaultRealm requires a value. The directory service will allow only users in the default realm to log on, and will search only the default realm for users and groups.
	ServiceUserName
	In the Query Authentication group box, type the (case sensitive) name of a user who can log on to the authentication provider.
	ServicePassword
	In the Query Authentication group box, type the password of the user you specified for the ServiceUserName. Click **Logon**. If the resulting logon to the authentication provider succeeds, the ServiceUserName and ServicePassword attribute values will display the user name and password you typed.
	LogonAttribute (Default: uid)
	Determines which LDAP attribute is used for logons to the directory service when the user doesn't specify a full dn. Also determines the short name to be persisted in Content Engine databases.

In this screen...	Perform this action...
	GroupPersistAttribute (Default: cn)
	Determines the LDAP short name to be persisted in Content Engine databases.
	UserDisplayNameAttribute (Default: cn)
	A display name for a user object generated by the authentication provider.
	GroupDisplayNameAttribute
	A display name for a group object generated by the authentication provider.
	After you have specified the required authentication attribute values, click **Next** and continue at Step 3 on page 123.

Novell eDirectory

In this screen...	Perform this action...
Configure Authentication Provider	Specify values for the following attributes.
	For more information on the attributes, click **Help** on the Configure Authentication Provider screen, or refer to "Configuring the connection to the Content Engine" in the IBM FileNet P8 documentation topic FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Novell eDirectory.
	Host
	Specify a fully qualified domain name, not an IP address, of the directory service host. Use the DNS server or a hosts file entry (on the Content Engine server) to resolve the host name of the authentication provider.
	WARNING Do not alter the Host value after Content Engine installation is complete.
	Port (Default: 389)
	The port number of the directory service. Choose the port number on the directory server that matches the EnableSSL attribute value.
	WARNING Do not alter the port number after Content Engine installation is complete.
	EnableSSL (Default: 0 = False)
	If EnableSSL is 1, the directory service will use an SSL connection.
	If EnableSSL is 0, the directory service will use a non-SSL connection.

In this screen...	Perform this action...
	DefaultRealm (Default: No value)
	The DefaultRealm value you specify is listed first in the realms collection returned by the directory service. The name should be the same as the User and Group Base value you specify (via Process Task Manager) to control user access to Process Engine.
	Required only if RestrictToDefaultRealm is 1 (True). Otherwise optional.
	RestrictToDefaultRealm (Default: 0 = Off)
	If RestrictToDefaultRealm = 1 (On), DefaultRealm requires a value. The directory service will allow only users in the default realm to log on, and will search only the default realm for users and groups.
	ServiceUserName In the Query Authentication group box, type the (case sensitive) name of a user who can log on to the authentication provider.
	ServicePassword
	In the Query Authentication group box, type the password of the user you specified for the ServiceUserName. Click **Logon**. If the resulting logon to the authentication provider succeeds, the ServiceUserName and ServicePassword attribute values will display the user name and password you typed.
	LogonAttribute (Default: cn)
	Determines which LDAP attribute is used for logons to the directory service when the user doesn't specify a full dn. Also determines the short name to be persisted in Content Engine databases
	GroupPersistAttribute (Default: cn)
	Determines the LDAP short name to be persisted in Content Engine databases.
	UserDisplayNameAttribute (Default: cn)
	A display name for a user object generated by the authentication provider.
	GroupDisplayNameAttribute (Default: cn)
	A display name for a group object generated by the authentication provider.
	After you have specified the required authentication attribute values, click **Next** and continue at Step 3 on page 123.

3. Complete the remaining GCD wizard screens as follows. This step completes the configuration of the GCD, thereby creating the new FileNet P8 domain.

   NOTE As shown in the following table, the GCD wizard will attempt to load the feature AddOns automatically. If it fails to do so (or if you are installing custom feature AddOns), you can load them manually, as described in "Load feature AddOns manually" on page 124.

In this screen...	Perform this action...
Configure GCD Provider	Accept the default values and click **Next**.
GCD Administrative Accounts	Do the following: a. Using the Selection Criteria group box, specify a search for accounts in your authentication provider that need administrative access to Content Engine resources. b. Click **Find** to populate the Accounts Found box with your search results. c. Click **Add>>** to move the desired accounts to the Accounts Selected box. **NOTE** We recommend you select at least one user account (in the following format): **Active Directory** DOMAIN\samAccount or User Principal Name **Sun Java System Directory Server** / **Novell eDirectory** full name or full DN Otherwise you will have to manually specify (rather than select from a list) an AddOn administrator in the AddOns screen (described later in this table). d. Click **Next.**
Ready to create P8 domain	Type the FileNet P8 domain name, and then click **Next** to create the new domain.

In this screen...	Perform this action...
AddOns	Do the following:
	a. Select an account from the administrative account selection list to be the AddOn administrator.
	NOTE The selection list presents only the user accounts (not group accounts) that you entered in the GCD Administrative Accounts screen described earlier in this table. If the list contains no account names, type the name of a user account that is a member of one of the groups you selected in the GCD Administrative Accounts screen.
	b. Type a valid password for the administrative account.
	c. Click **Finish**.
	d. If a message pops up to indicate successful configuration of the GCD and Content Engine, click **OK**. Otherwise, continue at "Load feature AddOns manually" on page 124.
	NOTE Check the Content Engine installation logs to verify the installation. Unless you have selected another location, the logs are at their default location: **\winnt\temp** (on Windows 2000) or **\Windows\temp** (on Windows 2003).

Load feature AddOns manually

Perform this procedure only if (1) feature AddOns did not install automatically from the AddOns screen presented during Content Engine setup, or (2) you want to install custom feature AddOns.

1. Log on to IBM FileNet Enterprise Manager.

2. Right-click the root icon in the left pane of the IBM FileNet Enterprise Manager and choose **Properties** from the option menu. The Enterprise Manager Domain Root Properties dialog box opens.

3. Click **AddOns**.

4. Click **Add/Browse**. The XML Import dialog box opens.

5. Do the following:

   a. Type any name (up to 256 alphanumeric characters) to assign to the AddOn.

   b. Click **Browse** and select the import XML file. Refer to the P8 help topic FileNet P8 Administration > Content Engine Administration > Feature AddOns > FileNet P8 Core Feature AddOns and sub-topics for the names of the XML files, predecessors, requirements, etc. corresponding to these AddOns.

   c. (Optional) If this is not the first AddOn you are installing, choose the predecessor AddOn from the associated list. The predecessor AddOn is the one to be installed immediately prior to the one you are now specifying. Multiple AddOns can have the same predecessor.

   d. Click **Recommended**.

   e. Click **OK**.

6. If you have another AddOn to install, repeat Step 2 through Step 5. Otherwise, you are done.

To join a FileNet P8 domain

Complete the GCD wizard screens as follows:

In this screen...	Perform this action...
P8 Domain	Do the following: a. Click **Join Existing Domain.** b. Type the name of any Content Engine server that contains an Object Store Service and is in the FileNet P8 domain you want to join. c. Click **Next**. **NOTE** If you typed the name of a server that does not (yet) contain a Content Engine Object Store Service or is for some reason not currently being recognized by your Windows DNS server as a legitimate server name, an error message will display. In this case, do one of the following: • Click **Yes** to return to the P8 Domain screen and type in a different (existing) Content Engine server name. • Click **No** to proceed to the Join Domain screen described below, where you will have to manually enter some additional values that would otherwise be filled in for you and not modifiable (e.g., the SYSINIT Path and P8 Domain Service Group fields).
Join Domain	If the domain name shown on the Join Domain wizard screen is blank or does not match the FileNet P8 domain you would like to join, go back to the previous P8 Domain screen and enter the name of a different (existing) Content Engine server that contains an Object Store Service and is in the FileNet P8 domain you want to join. Assuming you entered a valid Content Engine server name on the previous P8 Domain screen and experienced no interceding error message, do the following: a. Verify that the default Windows Service Logon account shown is the one you want. b. Type a Password value for the account shown. c. Click **Finish**. Content Engine joins the FileNet P8 domain. Click **OK** when the wizard announces that the GCD and Content Engine are successfully configured, and you are done. If, for some reason, you chose to continue to this screen after entering a not (yet) recognized Content Engine server name on the previous P8 Domain screen, you will have to manually enter values in the following fields and then click **Finish** to complete this procedure.

In this screen...	Perform this action...

SYSINIT Path

The path to the **sysinit.dat** file on a server that hosts a Content Engine Object Store Service and is in the FileNet P8 domain you want this new Content Engine server to join. If the field is blank, specify the value as in the following example (where the server hosting the Object Store Service is named CEServer1):

\\CESERVER1\FNCE_CESERVER1$\sysinit.dat

P8 Domain Service Group

The name of a group with permission to add a computer to a FileNet P8 domain. Example: Content Engine Servers. If this field is blank, you must enter the same name you specified when creating the FileNet P8 domain on the master GCD server. Also, if the group is a Windows domain local group or a universal group, its members must also be in the Windows deployment domain (i.e., containing the Content Engine servers).

Use Default accounts

For this check box, do one of the following:

- Leave it selected to accept the default account information for the Windows Service Logon account shown.

- Clear it if you want to choose an account for Content Engine Service logon from the Members list. Then click **List Members** and select one of the accounts to display it as the new Windows Service Logon account.

  If you choose default users, you will have to re-specify their existing passwords. If you choose non-default users, you are free to specify each password.

Password

You must supply a valid password for the Windows Service Logon account. If the account (e.g., FNCE_*machinename*) already exists, the new password will overwrite the existing password for the account.

NOTE Check the Content Engine installation logs to verify the installation. Unless you have selected another location, the logs are at their default location: **\winnt\temp** (on Windows 2000) or **\Windows\temp** (on Windows 2003).

Task 8b: Install Content Engine (Custom)

A *Custom* setup allows you to select which Content Engine features to install:

• Object Store Service

• Content Cache Service

• Process Services Administrator (included in Object Store Service)

• File Store Service

• Administrative Tools (IBM FileNet Enterprise Manager)

• Debug Tools

• Content Engine WebDAV Provider

• IBM FileNet P8 Client Connectivity

• Publishing Foundation (Publishing Plug-in)

• Application Engine Web Connectivity (Java)

• Content Engine COM SDK

• IBM FileNet P8 Content Federation Services Server for Image Services (CFS-IS)

Deployment and authentication notes

• Even if you don't use Windows Active Directory as your authentication provider, you still need to have it installed since Content Engine installation requires it, and the Windows Content Engine Service and COM Application user both require a Windows Active Directory user to run them.

• When installing Content Engine components (e.g., Object Store Service or File Store Service, or the IBM FileNet Enterprise Manager), the servers where these components are installed must be members of the "deployment" Windows domain (whether that be the parent or child domain) prior to running setup.

• The Content Engine setup will allow you to create or join a FileNet P8 domain during a Custom setup. You must *create* a FileNet P8 domain if you are installing Content Engine for the first time.

• The DefaultRealm value you specify during Content Engine installation should be the same as the User and Group Base value you specify (via Process Task Manager) to control user access to Process Engine.

• For logging purposes, grant these users write access to winnt\temp (for Windows 2000) or windows\temp (for Windows 2003): P8Apache (CatClient), fnce_<*server*> (catalog), Administrators (installer). Your environment may require write access for additional users.

Third-party software notes

• If the Apache HTTP Server components are not installed on the machine, you will be prompted to install them. Follow the Apache setup screen prompts.

• **WARNING** The Apache HTTP Server is installed for IBM FileNet P8 client connectivity for the Content Engine. By default, the Apache HTTP Server will be configured to use port 8008 for the installation. You can change this port assignment during setup. You should be aware of port assignments on your server. A conflict could arise if other programs are using port 8008.

- If the Microsoft Data Access Components (MDAC) is not set up on the machine, it will be installed without user intervention during Content Engine installation. If an earlier version of MDAC is installed, it will be overwritten.

- If you are installing Content Engine WebDAV provider, you must have Microsoft Internet Information Server (IIS) installed.

Feature component notes

- File stores: If you intend to avoid creating or using file stores on the initial Content Engine server, IBM recommends that you disable the File Store Service on that server. This assumes you will install a File Store Service on a remote file store server and disable all other features there.

- You can use IBM FileNet Enterprise Manager to administer multiple object stores in a single IBM FileNet P8 domain. To administer multiple IBM FileNet P8 domains from a single client machine, you must install Terminal Server on at least one machine in each domain. This machine should have IBM FileNet Enterprise Manager installed and configured for that domain. From your single client machine, you can connect to each machine using Terminal Server and use IBM FileNet Enterprise Manager to administer that specific domain. However, be aware that you cannot install Process Engine on a machine where Terminal Server is installed.

- Documentation: Identify the URL for the IBM FileNet P8 Platform documentation website that is described in "Install FileNet P8 Platform documentation" on page 57. You will need this value to configure the Content Engine documentation setting. If you do not provide a documentation URL, the installer will place an empty icon on the system desktop. You can change this setting later in the IBM FileNet Enterprise Manager, in which case the system also updates the documentation URL icon.

- When the Content Engine Setup wizard installs Object Store Service, it also installs Content Cache Service. When installed, Object Store Service uses this local Content Cache Service as its content cache. To take advantage of the local content cache, it is recommended that you install your cache client applications (such as Workplace, Team Collaboration Management, etc.) on a machine at the same site (local area network or geographic location) where an Object Store Service is installed.

- WebDAV: Microsoft Windows 2000 or 2003 Internet Information Server (IIS) is required for WebDAV support. You will be prompted for a valid Windows account and password.

- CFS-IS: If you previously installed CFS-IS on another machine in your FileNet P8 domain, then the Content Engine install you are about to do on this machine must include CFS-IS. Otherwise, you won't be able to work with an object store on this machine that uses an Image Services server as a fixed content device.

  Each installation of CFS-IS will require the machine's hosts file to include an entry for the Image Services server, or you must change the DNS configuration information on the server so that your machine can find the Image Services server.

- Feature AddOns: While installing Content Engine, you have the option of installing feature AddOns. A feature AddOn consists of custom implementations of classes, objects, and properties that support specific product functionality, such as publishing, searching, email, and IBM FileNet eForms. For detailed information about standard AddOns and possible custom AddOns, refer to the following topics in the IBM FileNet P8 Online Help:

  – FileNet P8 Administration > Content Engine Administration > Feature AddOns > FileNet P8 Core Feature AddOns

  – FileNet P8 Administration > Content Engine Administration > View/modify P8 domain properties > XML Import dialog box (AddOn Configuration tab)

– FileNet P8 administration > Content Engine Administration > FileNet P8 Domain > View/modify P8 domain properties > FileNet P8 domain root properties (Import AddOns tab)

To install the Content Engine using the Custom option

WARNING Do not rename any server after installing the Object Store Service, File Store Service, or Content Cache Service. If you need to rename a server, do so before installing Content Engine software.

1. Log on to the Windows server as an Active Directory domain user who is also a local administrator. You may need to be a Domain Account Operator or higher, depending on which option you choose when specifying the Windows service user to run the Content Engine services:

   • If you allow Content Engine Setup to use an existing domain group and user account for the Content Engine Servers group role and FNCE_<*machinename*> user role respectively, you do not need Domain Account Operator privileges if you specify an existing user account and password.

   • If you allow Content Engine Setup to create a new domain group and user account, Content Engine Servers and FNCE_<*machinename*> respectively, you need Domain Account Operator or higher privileges; and you'll need to assign a new password to this account.

2. Insert the *IBM FileNet P8 Content Engine* CD into the CD-ROM drive, navigate to the **ContentEngine** folder, and click **setup.exe**. The Content Engine Setup wizard opens.

   NOTE You can click **Back** at any time during the installation process to make changes in any previous wizard screen.

3. Complete the Setup screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the Content Engine installation.
License Agreement	Review and accept the license agreement for FileNet P8 software products, and then click **Next**.
Minimum Requirement	This screen appears only if the server where you are installing Content Engine software does not meet the suggested minimum system requirements posted in the FileNet P8 Hardware and Software Requirements on the FileNet Customer Service and Support web site (http://www.css.filenet.com).
	Click **Next** if you wish to proceed with the installation, but be aware that performance will be impacted. Or click **Cancel** to exit the wizard.
Customer Information	Type your user name (required) and organization (optional). Accept or change the default install log location, and then click **Next**.
Setup Type	Click **Custom**, accept or change the default install log location, and then click **Next**.

In this screen...	Perform this action...
Custom Setup	By default, the program features list shows all Content Engine components, except FileNet P8 Content Federation Services Server for Image Services, selected for installation.
	a. To specify the features you want to install, do the following for each entry in the list:
	i. Highlight the entry and select from its drop-down list (click the icon to the left of the entry) whether to install the feature or not.
	ii. If you choose to install the feature, click **Disk Usage** to confirm that you have sufficient disk space for it.
	You must select the Object Store Service feature if you are installing your first Content Engine server, which will be the FileNet P8 master Global Configuration Data (GCD) server (editable in the setup wizard).
	If you want to install only the IBM FileNet Enterprise Manager administrative client software, select Administrative Tools and deselect all the other features.
	NOTE If you are installing WebDAV, you must have Microsoft Internet Information Server (IIS) installed.
	b. Accept (or click **Change** to alter) the default Content Engine installation directory.
	c. Click **Next**.
FileNet P8 Content Federation Services Server for Image Services Setup	This screen appears only if you selected FileNet P8 Content Federation Services Server for Image Services for installation at the Custom Setup screen.
	Click **Browse** if you want to alter the default installation directory. Then click **Next**.
WebDAV Configuration	This screen appears only if you selected Content Engine WebDAV Provider at the Custom Setup screen.
	Type a valid Windows domain account and password (for example, WinOSDomain\Account_name) to use for WebDAV extension authentication. Then click **Next**.
	NOTE This account is used for Microsoft Internet Information Server (IIS) logon authentication (not for the Content Engine or object stores).

In this screen...	Perform this action...
Install third-party software	This screen appears only if you have not already installed third-party software required by Content Engine: MDAC and Apache HTTP Server.
	NOTE If you don't want to install the required third-party software at this time, but would rather install it yourself manually, click **Cancel** to stop the Content Engine Setup wizard.
	If prompted to install third-party software, do the following:
	a. Click **Next**.
	b. Follow all screen prompts.
	In most environments, you can accept the default installation values for third-party software unless otherwise noted.
Ready to Install	Do the following:
	a. If you already have an IBM FileNet P8 Documentation web site installed, you can configure Content Engine components to access it, as follows.
	NOTE If you don't yet have a documentation web site installed, see "Feature component notes" on page 128.
	i. Select the provided check box.
	ii. Type the URL of the web site in the following format:
	http://*<docserver>*:*<port#>*/*<ecm_help>*)
	where:
	docserver is the name of the Java web server
	port# is the port number
	ecm_help is the root folder of the documentation website
	You can use multipart root folders if your application server supports them (e.g., **/docs/ecm_help**).
	iii. Click **Test** to verify that the browser opens at the documentation URL. Then exit the browser.
	b. Click **Install** to install Content Engine. (The installation will take several minutes.)

In this screen...	Perform this action...
FileNet P8 Content Federation Services Server for Image Services Setup	This screen appears only if you selected FileNet P8 Content Federation Services Server for Image Services for installation at the Custom Setup screen.
	Do the following as prompted:
	a. Insert the *FileNet P8 Content Federation Services Server for Image Services* CD into the CD-ROM drive.
	b. In the Location text box type, or click **Browse** to navigate to, the folder path containing the installation software (4.0.*x.y*).
	c. Click **OK**.
	d. Click **OK** again to confirm that the folder contains the correct version of the FileNet P8 Content Federation Services Server for Image Services software. This action starts the installation.
Completing the Content Engine Setup wizard	Click **Finish**. This action completes the installation of Content Engine software and opens the GCD wizard to enable you to create a new, or join an existing, FileNet P8 domain.
	NOTE If the GCD wizard does not start automatically, navigate to **<*drive*>\Program Files\FileNet\Content Engine** and double-click **ConfigGCD.exe** to manually start it.
	Continue at

To create or join a FileNet P8 domain

Determine whether you want to create or join a FileNet P8 domain as follows:

1. If you are currently installing initial Content Engine components (e.g., the initial Object Store Service) on the first server, which will become the IBM FileNet P8 master Global Configuration Data (GCD) server, continue at .

2. If you are currently installing subsequent Content Engine components (e.g., a second Object Store Service on another FileNet P8 member server), and want to join an existing FileNet P8 domain, continue at .

    To join a FileNet P8 domain, you will be asked to enter the name of a server where Content Engine Object Store Service in that FileNet P8 domain is installed.

If an error occurs, or if you have to click **Cancel,** while the GCD wizard is running, the wizard will attempt to roll back any changes it has made since being started. (Rollback includes deletion of services, Windows registry keys, the GCD **sysinit** folder, etc.) With successful automatic rollback, you do not need to do any manual cleanup. Simply re-run the wizard (e.g., after fixing the underlying problem that caused it to fail).

Click **OK** if you see an error message stating that the **msdaora.dll** file may not have been installed or is corrupt. This is a Microsoft-generated message and does not impact Content Engine installation.

To create a FileNet P8 domain

1. Complete the initial GCD wizard screens as follows:.

In this screen...	Perform this action...
P8 Domain	Click **Create New Domain** and then click **Next**.
P8 Domain Service Account	Do the following: a. Create a new, or assign an existing, Windows Active Directory account to run the Content Engine services on this machine by doing one of the following: • Select the check box to accept the default account information for the P8 Domain Content Engine Servers group (such as *Content Engine Servers*) and a Windows service logon account (such as FNCE_*<machinename>*) that is a member of the group. (Note that FNCE_*<machinename>* cannot exceed 20 characters.) These accounts will be created if they do not already exist. • Clear the check box, type an existing group name, click **List Members**, and select from the list a Windows service logon account. The group must exist in the authentication domain in which you're installing Content Engine. Also, if the group you select is a domain local or a universal group, its members must also be in the Content Engine's authentication domain. b. Type a password for the Windows service logon account, which will override any password previously supplied to the account. c. Click **Next**.

In this screen...	Perform this action...
Configure Authentication Provider	Do the following:

Do the following:

a. Accept the default SYSINIT path (for example, **C:\Program Files\FileNet\Content Engine\sysconfig\sysinit**, or click **Edit** to locate a valid folder for the **sysinit.dat** file. Click **Reset** if you have changed the path and want to restore its default.

If you don't accept the default SYSINIT, be sure that the folder you choose is a shared folder with these permissions:

- Full Control for the group defined as Content Engine Servers

- Full Control for all Windows administrative users/groups that will directly maintain files (i.e., do backups and restores)

And be sure the share itself has one of the following permissions:

- Full Control for the Authenticated Users group (restrictive permissions on the folder will keep out unauthorized users)

- Full Control for Content Engine Servers and Windows administrative users/groups

b. Select an authentication provider from the provided list:

- Windows Integrated

- Sun Java System Directory

- eDirectory (Novell)

c. Continue at for instructions on specifying all other information in the screen.

2. Specify attribute values for your particular authentication provider as follows.

For your choice of authentication provider, the Configure Authentication Provider screen shows an associated table of color-coded attribute names and values. You cannot directly supply values for red attributes, which instead are automatically set based on earlier input or associated entries on this screen. However, you must supply values directly for all blue attributes, some of which have modifiable default values.

Windows Integrated (Active Directory)

In this screen...	Perform this action...
Configure Authentication Provider	Specify values for the following attributes.
	For more information on the attributes, click **Help** on the Configure Authentication Provider screen, or refer to "Configuring the connection to the Content Engine" in the IBM FileNet P8 documentation topic FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Windows Active Directory.
	DefaultRealm
	The name of a Windows domain where user accounts reside. The name should be the same as the User and Group Base value you specify (via Process Task Manager) to control user access to Process Engine. Leave this blank or use a format like the following:
	abc.xyz.com
	UserDisplayNameAttribute (Default: samAccountName)
	A display name for a user object generated by the authentication provider.
	GroupDisplayNameAttribute (Default: samAccountName)
	A display name for a group object generated by the authentication provider.
	After you have specified the required authentication attribute values, click **Next** and continue at Step 3 on page 139.

Sun Java System Directory Server

In this screen...	Perform this action...
Configure Authentication Provider	Specify values for the following attributes.
	For more information on the attributes, click **Help** on the Configure Authentication Provider screen, or refer to "Configuring the connection to the Content Engine" in the IBM FileNet P8 documentation topic FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Sun Java System Directory Server.

In this screen...	Perform this action...
	Host
	Specify a fully qualified domain name, not an IP address, of the directory server host. Use the DNS server or a hosts file entry (on the Content Engine server) to resolve the host name of the authentication provider.
	WARNING Do not alter the Host value after Content Engine installation is complete.
	Port (Default: 389)
	The port number of the directory service. Choose the port number on the directory server that matches the EnableSSL attribute value.
	WARNING Do not alter the port number after Content Engine installation is complete.
	EnableSSL (Default: 0 = False)
	If EnableSSL is 1, the directory service will use an SSL connection.
	If EnableSSL is 0, the directory service will use a non-SSL connection.
	ChaseReferrals (Default: 0 = False)
	If ChaseReferrals is 1, the directory service will allow logons by users it finds via directory referrals, and directory searches will return users and groups accessible via referrals.
	DefaultRealm (Default: No value)
	The DefaultRealm value you specify is listed first in the realms collection returned by the directory service.
	Required only if RestrictToDefaultRealm is 1 (True). Otherwise optional.
	RestrictToDefaultRealm (Default: 0 = Off)
	If RestrictToDefaultRealm = 1 (On), DefaultRealm requires a value. The directory service will allow only users in the default realm to log on, and will search only the default realm for users and groups.
	ServiceUserName
	In the Query Authentication group box, type the (case sensitive) name of a user who can log on to the authentication provider.
	ServicePassword
	In the Query Authentication group box, type the password of the user you specified for the ServiceUserName. Click **Logon**. If the resulting logon to the authentication provider succeeds, the ServiceUserName and ServicePassword attribute values will display the user name and password you typed.

In this screen...	Perform this action...
	LogonAttribute (Default: uid)
	Determines which LDAP attribute is used for logons to the directory service when the user doesn't specify a full dn. Also determines the short name to be persisted in Content Engine databases.
	GroupPersistAttribute (Default: cn)
	Determines the LDAP short name to be persisted in Content Engine databases.
	UserDisplayNameAttribute (Default: cn)
	A display name for a user object generated by the authentication provider.
	GroupDisplayNameAttribute
	A display name for a group object generated by the authentication provider.
	After you have specified the required authentication attribute values, click **Next** and continue at Step 3 on page 139.

Novell eDirectory

In this screen...	Perform this action...
Configure Authentication Provider	Specify values for the following attributes.
	For more information on the attributes, click **Help** on the Configure Authentication Provider screen, or refer to "Configuring the connection to the Content Engine" in the IBM FileNet P8 documentation topic FileNet P8 Administration > Enterprise-wide Administration > Security > Directory integration and authentication > Novell eDirectory.
	Host
	Specify a fully qualified domain name, not an IP address, of the directory service host. Use the DNS server or a hosts file entry (on the Content Engine server) to resolve the host name of the authentication provider.
	WARNING Do not alter the Host value after Content Engine installation is complete.
	Port (Default: 389)
	The port number of the directory service. Choose the port number on the directory server that matches the EnableSSL attribute value.
	WARNING Do not alter the port number after Content Engine installation is complete.
	EnableSSL (Default: 0 = False)
	If EnableSSL is 1, the directory service will use an SSL connection.
	If EnableSSL is 0, the directory service will use a non-SSL connection.
	DefaultRealm (Default: No value)
	The DefaultRealm value you specify is listed first in the realms collection returned by the directory service.
	Required only if RestrictToDefaultRealm is 1 (True). Otherwise optional.
	RestrictToDefaultRealm (Default: 0 = Off)
	If RestrictToDefaultRealm = 1 (On), DefaultRealm requires a value. The directory service will allow only users in the default realm to log on, and will search only the default realm for users and groups.
	ServiceUserName In the Query Authentication group box, type the (case sensitive) name of a user who can log on to the authentication provider.

In this screen...	Perform this action...
	ServicePassword
	In the Query Authentication group box, type the password of the user you specified for the ServiceUserName. Click **Logon**. If the resulting logon to the authentication provider succeeds, the ServiceUserName and ServicePassword attribute values will display the user name and password you typed.
	LogonAttribute (Default: cn)
	Determines which LDAP attribute is used for logons to the directory service when the user doesn't specify a full dn. Also determines the short name to be persisted in Content Engine databases
	GroupPersistAttribute (Default: cn)
	Determines the LDAP short name to be persisted in Content Engine databases.
	UserDisplayNameAttribute (Default: cn)
	A display name for a user object generated by the authentication provider.
	GroupDisplayNameAttribute (Default: cn)
	A display name for a group object generated by the authentication provider.
	After you have specified the required authentication attribute values, click **Next** and continue at Step 3 on page 139.

3. Complete the remaining GCD wizard screens as follows. This step completes the configuration of the GCD, thereby creating the new FileNet P8 domain.

NOTE As shown in the following table, the GCD wizard will attempt to load the feature AddOns automatically. If it fails to do so (or if you are installing custom feature AddOns), you can load them manually, as described in "Load feature AddOns manually" on page 141.

In this screen...	Perform this action...
Configure GCD Provider	Accept the default values and click **Next**.

In this screen...	Perform this action...
GCD Administrative Accounts	Do the following:
	a. Using the Selection Criteria group box, specify a search for accounts in your authentication provider that need administrative access to Content Engine resources.
	b. Click **Find** to populate the Accounts Found box with your search results.
	c. Click **Add>>** to move the desired accounts to the Accounts Selected box.
	NOTE We recommend you select at least one user account (in the following format):
	Active Directory
	DOMAIN\samAccount or User Principal Name
	Sun Java System Directory Server / **Novell eDirectory**
	full name or full DN
	Otherwise you will have to manually specify (rather than select from a list) an AddOn administrator in the AddOns screen (described later in this table).
	d. Click **Next.**
Ready to create P8 domain	Type the FileNet P8 domain name, and then click **Next** to create the new domain.

In this screen...	Perform this action...
AddOns	Do the following:
	a. Select an account from the administrative account selection list to be the AddOn administrator.
	NOTE The selection list presents only the user accounts (not group accounts) that you entered in the GCD Administrative Accounts screen described earlier in this table. If the list contains no account names, type the name of a user account that is a member of one of the groups you selected in the GCD Administrative Accounts screen.
	b. Type a valid password for the administrative account.
	c. Click **Finish**.
	d. If a message pops up to indicate successful configuration of the GCD and Content Engine, click **OK**.
	e. Reboot the machine, as prompted, if you installed IBM FileNet P8 CFS Server for Image Services.
	f. If the AddOns did not install automatically, continue at "Load feature AddOns manually" on page 141.
	NOTE Check the Content Engine installation logs to verify the installation. Unless you have selected another location, the logs are at their default location: **\winnt\temp** (on Windows 2000) or **\Windows\temp** (on Windows 2003).

Load feature AddOns manually

Perform this procedure only if (1) feature AddOns did not install automatically from the AddOns screen presented during Content Engine setup or (2) you want to install custom feature AddOns.

1. Log on to IBM FileNet Enterprise Manager.

    NOTE If your custom installation does not include IBM FileNet Enterprise Manager, log on to IBM FileNet Enterprise Manager from a machine in the FileNet P8 domain where it is installed, map a drive from that machine to the machine where you want to load the AddOns, and then go on to Step 2.

2. Right-click the root icon in the left pane of the IBM FileNet Enterprise Manager and choose **Properties** from the option menu. The Enterprise Manager Domain Root Properties dialog box opens.

3. Click **AddOns**.

4. Click **Add/Browse**. The XML Import dialog box opens.

5. Do the following:

    a. Type any name (up to 256 alphanumeric characters) you wish to assign to the AddOn.

    b. Click **Browse** to select the import XML file for the add on function on the installation media or directory. Refer to the P8 help topic FileNet P8 Administration > Content Engine Administration > Feature AddOns > FileNet P8 Core Feature AddOns and subtopics for the names of the XML files, predecessors, requirements, etc. corresponding to these AddOns.

c. (Optional) If this is not the first AddOn you are installing, choose the predecessor AddOn from the associated list. The predecessor AddOn is the one to be installed immediately prior to the one you are now specifying. Multiple AddOns can have the same predecessor.

d. Click **Recommended**.

e. Click **OK**.

6. If you have another AddOn to install, repeat Step 2 through Step 5. Otherwise, skip to "To verify the IBM FileNet P8 Content Federation Services Server for Image Services installation" on page 144.

To join a FileNet P8 domain

1. Complete the GCD wizard screens as follows:

In this screen...	Perform this action...
P8 Domain	Do the following:
	a. Click **Join Existing Domain.**
	b. Type the name of any Content Engine server that contains an Object Store Service and is in the FileNet P8 domain you want to join.
	c. Click **Next**.
	NOTE If you typed the name of a server that does not (yet) contain a Content Engine Object Store Service or is for some reason not currently being recognized by your Windows DNS server as a legitimate server name, an error message will display. In this case, do one of the following:
	• Click **Yes** to return to the P8 Domain screen and type in a different (existing) Content Engine server name.
	• Click **No** to proceed to the Join Domain screen described below, where you will have to manually enter some additional values that would otherwise be filled in for you and not modifiable (e.g., the SYSINIT Path and P8 Domain Service Group fields).

In this screen...	Perform this action...

Join Domain	If the domain name shown on the Join Domain wizard screen is blank or does not match the FileNet P8 domain you would like to join, go back to the previous P8 Domain screen and enter the name of a different (existing) Content Engine server that contains an Object Store Service and is in the FileNet P8 domain you want to join.
	
	Assuming you entered a valid Content Engine server name on the previous P8 Domain screen and experienced no interceding error message, do the following:
	
	    a. Verify that the default Windows Service Logon account shown is the one you want.
	
	    b. Type a Password value for the account shown.
	
	    c. Click **Finish**. Content Engine joins the FileNet P8 domain. Click **OK** when the wizard announces that the GCD and Content Engine are successfully configured, and continue at Step 2.
	
	If, for some reason, you chose to continue to this screen after entering a not (yet) recognized Content Engine server name on the previous P8 Domain screen, you will have to manually enter values in the following fields and then click **Finish** to complete this procedure.
	
	SYSINIT Path
	
	The path to the **sysinit.dat** file on a server that hosts a Content Engine Object Store Service and is in the FileNet P8 domain you want this new Content Engine server to join. If the field is blank, specify the value as in the following example (where the server hosting the Object Store Service is named CEServer1):
	
	\\CESERVER1\FNCE_CESERVER1$\sysinit.dat
	
	P8 Domain Service Group
	
	The name of a group with permission to add a computer to a FileNet P8 domain. Example: Content Engine Servers. If this field is blank, you must enter the same name you specified when creating the FileNet P8 domain on the master GCD server. Also, if the group is a Windows domain local group or a universal group, its members must also be in the Windows deployment domain (i.e., containing the Content Engine servers).

In this screen...	Perform this action...
	Use Default accounts
	For this check box, do one of the following:
	• Leave it selected to accept the default account information for the Windows Service Logon account shown.
	• Clear it if you want to choose an account for Content Engine Service logon from the Members list. Then click **List Members** and select one of the accounts to display it as the new Windows Service Logon account.
	If you choose default users, you will have to re-specify their existing passwords. If you choose non-default users, you are free to specify each password.
	Password
	You must supply a valid password for the Windows Service Logon account. If the account (e.g., FNCE_*machinename*) already exists, the new password will overwrite the existing password for the account.
	NOTE Check the Content Engine installation logs to verify the installation. Unless you have selected another location, the logs are at their default location: **\winnt\temp** (on Windows 2000) or **\Windows\temp** (on Windows 2003).

2. Reboot the machine, as prompted, if you installed IBM FileNet P8 CFS Server for Image Services.

To verify the IBM FileNet P8 Content Federation Services Server for Image Services installation

If you installed the IBM FileNet P8 CFS Server for Image Services program feature as part of your Content Engine installation, verify that this feature is correctly installed:

1. In the Services control panel for Windows, verify that IBM FileNet CFS Server for Image Services is listed.

2. In the Windows registry, verify that the Version value of the following key matches what you installed: HKEY_LOCAL_MACHINE\Software\FileNet\WAL\CurrentVersion\Version.

Task 9: Configure the Content Engine environment

To enable Content Engine access to a DB2 database

If your database is DB2, and you have installed IBM DB2 Universal Database Version 8.2 FixPak 2 (equivalent to IBM DB2 Universal Database Version 8.1 FixPak 9), you must add the Content Engine Servers group (or its equivalent) to the local DB2USERS group on each Content Engine server. Otherwise, Content Engine will not be able to access the DB2 database.

To assign permissions for the FileNet P8 Apache User

The authentication domain P8Apache user logging on to the Apache service needs permissions on certain installed Apache folders. You must be a local administrator (or have equivalent permissions) on the Content Engine machine to perform this procedure.

NOTE The authentication domain P8Apache user must be created before you can complete P8Apache-specific steps below.

1. Verify or create the authentication domain P8Apache user.

   For additional details, see the installation task "Create groups and users required for IBM FileNet P8 installation" on page 49.

2. On the Content Engine server navigate to the Apache installation directory (e.g., Default location: **Program Files\Apache Group\Apache2**).

3. Add the <*authentication domain*>\P8Apache user read and execute (RX) rights (Read & Execute, List Folder Contents, Read) to the script and document folders (**\cgi-bin** and **\htdocs**).

4. Add the <*authentication domain*>\P8Apache user change rights (Modify, Read & Execute, List Folder Contents, Read, Write) to the Apache logs (**\logs**) folder.

5. Add the <*authentication domain*>\P8Apache user read and execute (RX) rights (Read & Execute, Read) to the **Apache.exe** binary executable, whose default location is **Program Files\Apache Group\Apache2\bin\Apache.exe**.

6. Launch the Windows Services snap-in (for example, by choosing **Start > Programs > Administrative Tools > Services**).

7. Right-click the **Apache2** service icon, choose **Properties**, and click **Stop** to stop the Apache2 service.

8. Select the **Log On** tab and select **Log on as: This account**.

9. Browse for, or type the **P8Apache** user in the Name box and click **OK**. Type and confirm the password, and click **Apply**.

10. If the P8Apache user was granted the "Log on as a service" user right, click **OK**.

11. From the **General** tab click **Start** to start the Apache2 service.

12. Close the Apache2 Properties page and the Services snap-in.

Modify the Local Security Policy on the Content Engine Server(s)

1. On the Content Engine server, log in with an account that has local administrator rights.

2. Select **Start** > **Programs** > **Administrative Tools** > **Local Security Policy**.

   NOTE If Content Engine is installed on the domain controller (supported in demo, non-production configurations only), select **Domain Controller Security Policy** instead of **Local Security Policy**.

3. Expand **Local Policies** > **User Rights Assignment**.

4. Double-click **Access this computer from the network** and add all the Authentication domain group(s)/users that will need to logon to the Content Engine system. Everyone is the default.

5. Click **OK** twice.

6. Double-click **Act as part of the operating system** and add the authentication domain **P8Apache** user.

7. Click **OK** twice.

8. Double-click **Log on as a service** and add the authentication domain **P8Apache** user.

9. Click **OK** twice.

10. Close the Administrative Tools application.

11. Log off and log back on to the computer (not as the P8Apache user). The new permissions are now set for the P8Apache account.

To set permissions for the file stores

For Windows Active Directory authentication, IBM recommends adding the following permissions on the shares containing local and remote file stores:

- Accounts: P8Apache User - Full Control, Authenticated Users - Full Control.

- Other accounts as required for your specific environment.

To enable trace logging on a standalone FileNet Enterprise Manager

If it isn't already running, start the Remote Registry Service on the machine where Content Engine is installed if you want to allow trace logging to be enabled on the Content Engine from machines where you will later install a remote FileNet Enterprise Manager.

Task 10: Create an object store and verify the Content Engine installation

To create an object store, you need to know the following:

- Display name for new object store

- Object store description (optional)

- Server where Object Store Service is installed

- Database engine (SQL Server, Oracle, or DB2)

- (SQL Server) Type of authentication: Windows Authentication or Database Engine Authentication

- (Oracle) User name and password for the tablespace corresponding to the object store

- (DB2) SQL authorization ID and password for the database

- Database alias

    - (SQL Server) Database name

    - (Oracle) Net service name

    - (DB2) Local database alias

- Whether to create a database store or a file store

- Initial administrative and user groups that can access the object store

Deployment notes

- You must create at least one object store in your FileNet P8 domain.

- IBM recommends creating the first object store as a database store in order to save preferences.

- You can create the required shared folder for the object store's local or remote file store either before or during execution of the Create an Object Store wizard. However, if your file store will be remote, it is strongly recommended that you first install File Store Service on the remote server. (Refer to "Configure remote Content Engine file stores" on page 267 for the procedure to do this.) Otherwise, a crash of the remote server could result in the loss of in-progress transactions involving the remote file store.

- The name you assign to a Content Engine object store must meet the following requirements:

    - Can be no more than 64 alphanumeric characters.

    - Can be different from the name of the associated database (SQL Server and DB2) or tablespace (Oracle).

    - Must be unique from other object store names within FileNet P8 domain.

NOTE There may be other restrictions imposed by the underlying database programs which may be an issue. Consult your database documentation or administrator for any restrictions.

Authentication notes

- Depending on your environment, you can create a new Domain Local - Security group for each new object store. Distribution Groups are not supported.

- Care must be taken when planning the groups that are given access to object stores at creation time. In order to add a new 'default' group to an object store that has gone into production, you can run the Security Script wizard in IBM FileNet Enterprise Manager (see the IBM FileNet P8 online help topic FileNet P8 Administration > Enterprise-wide Administration > Security > How to... > Update object store with new users and groups). It is recommended that a main 'Domain Local - Security group' be selected when the object store is created. New Domain Local - Security groups (or Domain users) could then be added to that group.

Database notes

- All the object stores you create for Content Engine must be based on the same database engine (SQL Server, Oracle, or DB2). For example, you cannot have one object store based on Oracle and another based on SQL Server.

- If using Windows Authentication, instead of SQL Server Authentication, for the SQL Server database engine, you must create a valid SQL Server login for the Windows Service Account group (e.g., *Content Engine Servers)*.

- If Oracle is your database engine, the Oracle client must be installed on the Content Engine server. You cannot create an object store with an Oracle user name that contains a space or has mixed-case characters.

- You must create an Oracle tablespace for each object store prior to running the Create an Object Store wizard. Repeat this step for each object store you want to create. Once an object store is created, you can refine its definition and add content.

- The Create Object Store wizard will fail if you try to assign a new object store to a database/tablespace that is not completely empty.

Content store notes

- You can create two types of content stores: file stores and database stores.

  - Create a *file store* if you choose to store the contents of your documents or business objects in a Windows DFS or NTFS file system as part of your storage policy. The path name to a shared folder specifies the location of the new file store.

  - Create a *database store* if you choose to store the contents in the database as binary large objects (BLOBs).

- A *fixed file store* is a file store that has a connection to a third-party, large-capacity, fixed-content (possibly write-once) system. You must create a fixed content device (an IBM FileNet P8 object) before creating a fixed file store (see FileNet P8 Administration > Content Engine Administration > Content stores > File stores > How to... > Create file store).

- The file store and/or database names must be unique within an object store.

- File stores on encrypted NTFS devices are not supported.

To create an object store

Perform this procedure from a server where IBM FileNet Enterprise Manager is installed.

1. On a machine that has the IBM FileNet Enterprise Manager installed, log on as a GCD administrator.

2. Launch the IBM FileNet Enterprise Manager (double-click the desktop shortcut) and log on.

   NOTE You will be required to log on when the IBM FileNet Enterprise Manager is started. Windows Integrated authentication will not require a password.

3. Right-click the **Object Stores** container and choose New Object Store.

4. Work through the initial Create Object Store wizard screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the object store creation.
Name and Describe the Object Store	Type the display name for the object store. The symbolic name and description are entered automatically as you type the display name, but you can edit them before leaving this screen. Then click **Next**. **NOTE** The symbolic name, used for internal programmatic purposes, must contain only ASCII characters and must begin with an alphabetic character.
Specify the Database Engine	Click **SQL Server**, **Oracle**, or **DB2**. Then continue at Step 5 for instructions on specifying the other information in the screen.

5. Specify the required information shown in one of the following tables, based on your choice of database engine.

SQL Server

In this screen...	Perform this action...
Specify the Database Engine	Select a database server name from the drop-down box, and then click **Next**.
	NOTE If the Microsoft SQL database was configured with Named Instances, you must enter the database and instance name (e.g., YourServer\Your_Inst). If the database server is in a different Active Directory domain or forest, you must type the server name.
Specify Account Information	Select either Windows or Database Engine authentication and then click **Next**.
	• For Database Engine authentication, enter a valid SQL Server user name and password.
	• For Windows authentication, the MS SQL Server database server and Content Engine server must be in the same Windows Active Directory forest. For help with proper credentials for database connectivity, see the procedure "To Configure Microsoft SQL Login for Content Engine" in "Install Microsoft SQL Server for IBM FileNet P8" on page 58.
Specify the Database Name	Click either **Create a New Database** (and enter a new name) or **Choose an Existing Database** (and select the database name from the drop-down list). Then click **Next** and continue at Step 6.
	NOTE The Content Engine software will detect all Object Store Service and SQL Server database installations available in your Windows domain and makes them available to you as choices when you run the Create Object Store wizard. The database you select must be empty.

Oracle

In this screen...	Perform this action...
Specify the Database Engine	Type the Oracle net service name and click **Next**.
Specify User Account Information	Type the Oracle user name and password you specified in creating the tablespace for this object store (see "Install Oracle Server for IBM FileNet P8" on page 63). Then click **Next** and continue at Step 6.

DB2

In this screen...	Perform this action...
Specify the Database Engine	Type the local database alias and click **Next**.
Specify User Account Information	Type the DB2 user name and password for the database (see "Install DB2 server for Content Engine and Process Engine" on page 68). Then click **Next** and continue at Step 6.

6. Work through the following Create Object Store wizard screens:

In this screen...	Perform this action...
Specify the default Content Store	Click either **Database Store** or **File Store**, and then click **Next**. If you clicked **Database Store**, skip to Step 7.
Specify File Store Folder	Click **Local Server** to use a folder on this server, or click **Remote Server** to use a folder on a remote server. Click **Browse** if no shared folders appear in the drop-down list. If the folder doesn't yet exist, click **New Folder**. The file store folder must be shared and the P8Apache user and Authenticated Users group should be added to the permissions list for the share.

In this screen...	Perform this action...
Fixed File Store	Do the following:

    a. If you intend to use a fixed content device for your file stores, select the Fixed File Store check box and continue at Step b. Otherwise, clear the check box and skip to Step h.

    b. Select a fixed content device from the selection list.

        NOTES

- Hitachi Data Systems and IBM TSM/DR550 (Tivoli Storage Manager) will appear in the selection list only if you have already installed Content Engine 3.5.1 Service Pack. See ""Install Service Packs and patches for core components" on page 236.

- Hitachi fixed content devices used for file stores must reside in the same Active Directory domain as the Content Engine servers.

- See *IBM FileNet P8 Platform Release Notes* for the latest information on FileNet certification of IBM TSM/DR550 as a fixed content device.

    c. If you selected FileNet Image Services, then IBM FileNet Enterprise Manager displays the Default IS Document Class group box, including the default document class of the selected fixed content device.

    d. If you selected EMC Centera or SnapLock, IBM FileNet Enterprise Manager also displays retention information from which you can select a retention period.

    e. (Optional) Clear the Create Referral File check box, and IBM FileNet Enterprise Manager will warn that full text indexing won't be available for the new file store. (A referral file is used to reindex content stored in a fixed file store.)

    f. (Optional) Click **Selected below** in the Default IS Document Class group box to override the default document class of the fixed content device. IBM FileNet Enterprise Manager then enables a selection list in the lower part of the group box and fills it with available IS document classes.

    g. (Optional) If you clicked **Selected below** in Step f, you can choose an alternate default IS document class from the selection list.

    h. Click **Next** and continue at Step 7.

7. Work through the remaining Create Object Store wizard screens as follows:

In this screen...	Perform this action...
Specify object store administrators	Click **Add...** to add the FileNet P8 Domain groups and users that are likely to need administrative access to the object store.
	NOTE You may have to select a Realm from the drop-down box to get a list of the accounts from which you want to choose.
Select Users and Groups	Click **Find**. Then press and hold the control (CTRL) key while you highlight (select) the required administrator groups/users using the left mouse button. With all required groups/users selected, release the CTRL key, click **OK**, and then click **Next**.
	NOTE By default, the account used to create the object store will be added to the list of administrative users. At least one administrator user account must be added to the object store. Object store administrators will be able to log on to IBM FileNet Enterprise Manager and do administrative work on that object store.
Specify Initial User Groups	Click **Add...** to add the FileNet P8 Domain groups that are likely to need basic non-administrative access to the object store.
	NOTE You may have to select a Realm from the drop-down box to get a list of the accounts from which you want to choose.
Select Users and Groups	Click **Find,** select the appropriate Content Engine groups/users, click **OK**, and then click **Next**.
	NOTE If you select no groups, the wizard will default to the #AUTHENTICATED-USERS group, which will enable all network users in the authentication realm to log on and access the object store (e.g., under Windows authentication, all accounts in Domain Users).
Completing the Create an Object Store Wizard	Click **Finish** to create the object store. When the status displayed in the Object Store Create Status window shows that the object store has been successfully created, click **OK**.

NOTE If, as an object store administrator, you need to add more users or groups to the object store, use the Security Script wizard described in FileNet P8 Administration > Enterprise-wide Administration > Security > How to... > Update object store with new users and groups.

To verify the Content Engine installation

The following steps are the same whether you use Microsoft SQL Server, Oracle, or DB2 for the database engine.

1. Create a subfolder as follows:

   a. Expand the Object Stores container and expand the node for the object store you just created.

   b. Right-click the Root Folder icon, and select New Sub Folder.

   c. Enter the Folder Name and click **Create**.

2. Create a document as follows:

   a. Expand the Root Folder container.

   b. Right-click the subfolder you just created, and select New Document.

   c. Enter the Document Title (e.g., Coffee Bean.bmp), click **With content**, and click **Next**.

   d. Click **Browse/Add** to select a file (e.g., **c:\winnt\Coffee Bean.bmp**), click **Open,** and then click **Create**.

      NOTE The new containment name should be *Coffee Bean* with a major version of 1.

3. Check out a document as follows:

   a. Right-click the document object (Coffee Bean.bmp) you just created, and select **Exclusive Check Out** (Default).

   b. Navigate to the folder where you want the checked-out document to reside and click **Open**.

   c. Click **Yes** to edit the file.

   d. Make some change to the file and save it.

   e. Close the application you used to edit the file.

4. Check in a document as follows:

   a. Right-click the document object (Coffee Bean.bmp) you just edited, and select **Check In**.

   b. In the File Name field, click **Browse/Add**.

   c. Select the file you have checked out (e.g., *Coffee Bean.bmp)* and click **Open**.

   d. Click **Check In**.

   e. Right-click the document object you just checked in and click the Versions tab of the Properties dialog box.

   f. You should now see the Major Version field change once the document is checked in.

Using IBM FileNet Enterprise Manager to display file store status

The Windows user who logged on to IBM FileNet Enterprise Manager as an IBM FileNet P8 user and then created a file store will see the status of the file store as online, and will be able to add content to it. All other Windows users, even if logged on to IBM FileNet Enterprise Manager as the same IBM FileNet P8 user who created the file store, will see its status as offline, and thus will not be able to add content to it.

To enable a Windows logon user to see an online status for a file store and to add content to it, you must add the user to the directory security of the file store with the following permissions: Modify, Read & Execute, List Folder Contents, Read, and Write. Alternatively, as a member of the Local Administrators group you can add the Windows logon user to the *<DOMAIN>*\Content Engine Servers group.

Task 11a: Install Process Engine (Windows)

NOTES

- Before beginning this task, ensure that all applicable tasks listed in the "Installation Planning Considerations" on page 20 have been completed.

- Be sure to have the correct database information including server names, database and instance names, tablespace names, and filegroups. Entering incorrect information during Process Engine installation could cause the installation to fail. Recovery could mean uninstalling and re-installing the Process Engine software.

Verify the database connection (Oracle)

The database that Process Engine will use must be running and be fully configured for IBM FileNet use prior to starting Process Engine Setup. If the database will be remote, the database client software must also be installed and running on Process Engine when Process Engine Setup is started. See the "Install Oracle Server for IBM FileNet P8" on page 63 task for installation and configuration procedures.

Take the following steps to verify that the Oracle database instance used by Process Engine is accessible. Make whatever corrections are necessary before proceeding to "Install the Process Engine software" on page 157.

1. Execute the following at a command prompt:

   sqlplus

2. At the SQLPlus prompt, enter a DBA userid and password.

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

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

Following is an example of the information returned:

   INSTANCE_NAME

   HOST_NAME

   VERSION

   ----

   p8dbshr
   HQVWBUCS
   9.2.0.7.0

In this example:

   the instance, ORACLE_SID=p8dbshr

   the database server name is hqvwbucs

   the oracle server is at the 9.2.0.7 version

Verify the database connection (SQL Server)

The database that Process Engine will use must be running and be fully configured for IBM FileNet use prior to starting Process Engine Setup. If the database will be remote, the database client software must also be installed and running on Process Engine when Process Engine Setup is started. See "Install Microsoft SQL Server for IBM FileNet P8" on page 58 for installation and configuration procedures.

Take the following steps to verify that the SQL Server database instance used by Process Engine is accessible. You will need to know both the Process Engine database and filegroup names. Make whatever corrections are necessary before proceeding to "Install the Process Engine software" on page 157.

In this example, the database is VWdb and the filegroup name is vwdata_fg. Both the database name and filegroup name must match what was defined when the database MS SQL server was installed and configured.

1. At a command prompt, enter:

   isql -E -S<*server name*>\<*instance name*>

   This command puts Process Engine into isql interactive mode.

2. At the isql prompt, enter:

   1> use *VWdb*
   2> go

   This command verifies that the Process Engine database has been created. If you get another prompt with no error, you are attached to that database.

3. Verify that the correct Process Engine filegroup was created. At the isql prompt, enter:

   1> select substring(groupname,1,20) from sysfilegroups where groupname = '<*defined filegroup*>'
   2> go

   You should get a listing of the Process Engine filegroups, for example:

   groupname

   _____

   vwdata_fg

Verify the database connection (DB2)

1. At a command prompt, enter:

   db2cmd

2. At the DOS prompt, start the DB2 Command Line Processor by typing:

   db2

3. At the DB2 prompt, enter the following command:

   connect to <*database alias*> user f_sw using <*f_sw password*>

   DB2 will display the database connection information.

Following is an example of the database connection command and the information returned:

db2 => connect to pedbwin user f_sw using f_sw

Database Connection Information

Database server   = DB2/AIX64 8.2.0
SQL authorization ID   = F_SW
Local database alias   = PEDBWIN

In this example, the database alias is pedbwin and the f_sw user password is f_sw.

Install the Process Engine software

The Process Engine installation occurs in two parts that are separated by a restart of the system. After the restart, the second part of the installation continues automatically.

1. Log on as a member of the local Administrators group or a user with equivalent permissions. The user you log on as must also be a database administrator.

2. Insert the Process Engine CD. If Autorun is enabled, the Setup program will start. Select *Process Engine*. Otherwise, execute **Setup.exe**.

3. A sequence of installation screens will be presented. Refer to the tables below for information on the screens you will see and the steps to take.

.

In this screen...	Perform this action...
Welcome	Click **Next** on the Welcome screen to proceed with the installation
Software License Agreement	Review and accept the license agreement for IBM FileNet P8 software products, and then click **Yes**. You must accept the terms of the agreement to proceed with the installation.
Documentation Configuration	Enter the Documentation Server URL, which is where the IBM FileNet P8 Platform Documentation was installed. Your entry must be in the following format: http://*<docserver:port#>*/*<ecm_help>* where: *docserver* is the name of the Java web server. *port#* is the port number. *ecm_help* is the root folder of the documentation website. You can use multi-part root folders (e.g.,**/docs/ecm_help**) if your application server supports them.

In this screen...	Perform this action...
Select Components	Indicate whether you want to configure the Rules Engine interface to run on this Process Engine. Click **Yes** if the JRules software is already installed on this computer or if you know where on this computer JRules will be installed later. Click **No** if the JRules software is not and will not be installed on this computer, or if you do not know exactly where on this computer JRules will be installed later. If you later install JRules software on this Process Engine, follow the procedures in "Enable Rules Engine integration manually" on page 281 to enable Rules Engine integration manually.
Choose Destination Location **NOTE** This window is displayed only if you click Yes in the Select Components window to install iLog JRules.	Enter the full path to the iLog JRules software installation directory. The directory you specify must already exist. Later during installation (in "Enable Rules Engine integration" on page 279), you will finish setting up Rules Engine integration.
Common Files	Choose the destination directory for configuration files that will be shared with other IBM FileNet P8 components.
Domain Name	Enter *<domain name>*:*<organization>*, where: The maximum length of your *<domain name>* entry does not exceed 20 characters. The maximum length of your *<organization>* entry does not exceed 20 characters. Both your *<domain name>* and *<organization>* entries contain only alphanumeric characters and underscores. A typical convention is to enter *<your PE machine name>*:FileNet. If the machine name includes hyphens, replace them with underscores in your entry.
Primary Server Selection	Leave the box checked indicating that this is the primary Process Engine.
Executable Files	Indicate the installation location for the executable files
Configuration Files	Indicate the installation location for the configuration files

In this screen...	Perform this action...
Local or Remote RDBMS	Indicate whether the database will be local or remote.
	Depending upon your selection here you will be presented with a number of additional screens appropriate to database location and database software. Proceed as appropriate to:
	• "Remote Microsoft SQL database" on page 160
	• "Local SQL database" on page 160
	• "Remote DB2 database" on page 160
	• "Remote Oracle database" on page 161
	• "Local Oracle database" on page 162.
	NOTE Only remote DB2 databases are supported.

Remote Microsoft SQL database

In this screen...	Perform this action...
Remote RDBMS Server	Enter the name of the remote database server.
RDBMS Instance Name	Enter the name of the instance to be used by Process Engine. Leave the field blank if the default instance is to be used, otherwise enter the name of the instance that was created in "Install Microsoft SQL Server for IBM FileNet P8" on page 58.
Database Name	Enter the name of the database to be used by Process Engine, as created in "Install Microsoft SQL Server for IBM FileNet P8" on page 58. The default is VWdb.
FileNet Data Filegroup Name	Enter the name of the filegroup to be used for Process Engine data as created in "Install Microsoft SQL Server for IBM FileNet P8" on page 58. The default is vwdata_fg.

Local SQL database

In this screen...	Perform this action...
RDBMS Instance Name	Enter the name of the instance to be used by Process Engine. Leave the field blank if the default instance is to be used, otherwise enter the name of the instance that was created in "Install Microsoft SQL Server for IBM FileNet P8" on page 58.
Database Name	Enter the name of the database to be used by Process Engine, as created in "Install Microsoft SQL Server for IBM FileNet P8" on page 58. The default is VWdb.
FileNet Data Filegroup Name	Enter the name of the filegroup to be used for Process Engine data as created in "Install Microsoft SQL Server for IBM FileNet P8" on page 58. The default is vwdata_fg.

Remote DB2 database

In this screen...	Perform this action...
Database Alias Name	Enter the database alias name as assigned in "Install DB2 Client for Content Engine and Process Engine" on page 77.
FileNet Data Tablespace name	defaults to VWDATA_TS
DB2 Passwords	Enter the password for the Operating System user **f_sw.**
	Enter the password set for this user in either "Install DB2 server for Content Engine and Process Engine" on page 68 if database authentication is SERVER or SERVER_ENCRYPT, or "Install DB2 Client for Content Engine and Process Engine" on page 77 if authentication is CLIENT.

In this screen...	Perform this action...
DB2 Passwords	Enter the password for the Operating System user **f_maint**.
Although the screen title doesn't change the question in the screen does.	Enter the password set for this user in either "Install DB2 server for Content Engine and Process Engine" on page 68 if database authentication is SERVER or SERVER_ENCRYPT, or "Install DB2 Client for Content Engine and Process Engine" on page 77 if authentication is CLIENT.

Remote Oracle database

In this screen...	Perform this action...
Oracle Environment Variables	Enter the appropriate values for the LOCAL, Oracle SID and Oracle Home variables.
	LOCAL This is the global database name or the server connecting string.
	If the database is remote, the Oracle Home path you enter refers to the local Oracle Client installation directory.
Temporary Tablespace Name	Enter the Oracle tablespace to be used by Process Engine for temporary data. Default value is VWTEMP_TS but this entry must match the value you used when the temporary tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63.
FileNet Data Tablespace Name	Enter the Oracle tablespace to be used for Process Engine data. Default value is VWDATA_TS but this entry must match the value you used when the data tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63
Index Tablespace Name	Enter the optional tablespace to be used by Process Engine for indexes. The data tablespace will be used if no index tablespace is designated. Default value is VWINDEX_TS but this entry must match the value you used when the index tablespace was created in"Install Oracle Server for IBM FileNet P8" on page 63. Leave blank of no separate index tablespace is desired.

Local Oracle database

In this screen...	Perform this action...
Oracle Environment Variables	Enter the appropriate values for the Oracle SID and Oracle Home variables.
	The Oracle Home path you enter refers to the local Oracle installation directory.
Temporary Tablespace Name	Enter the Oracle tablespace to be used by Process Engine for temporary data. Default value is VWTEMP_TS but this entry must match the value you used when the temporary tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63.
FileNet Data Tablespace Name	Enter the Oracle tablespace to be used for Process Engine data. Default value is VWDATA_TS but this entry must match the value you used when the data tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63
Index Tablespace Name	Enter the optional tablespace to be used by Process Engine for indexes. The data tablespace will be used iff no index tablespace is designated. Default value is VWINDEX_TS but this entry must match the value you used when the index tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63. Leave blank of no separate index tablespace is desired.

4. Review and verify the installation summary information. Click **Next** to proceed if all information is correct, or **Back** to make changes.

5. Oracle database only: When prompted, enter the Oracle sys password. The password is required to run the following SQL scripts: pe_install_scripts.sql, pe_filenet_site.sql, pe_create_stored_procedures.sql, and pe_grant_sp_permissions.sql. For further information about these scripts, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

   NOTE If an error message indicates that the scripts did not run, you must resolve the errors before proceeding; see the *IBM FileNet P8 Platform Troubleshooting Guide* for further information.

6. When setup is complete, a prompt to restart the computer displays. Click **Yes I want to restart my computer now** and click **Finish**. Remove the CD before proceeding.

7. When the system restarts, log on using the same account you used in step 1. After you log on, the Process Engine setup will complete. If installation fails at this point, correct the errors that caused the failure and run the post-boot setup program by navigating to the Process Engine install folder and executing:

   setup.exe -postboot

   Reasons for Setup failure could include:

   - Inability to connect to the remote database.

   - Incorrect password for the fnsw user identified to the IMS ControlService and/or Process Engine Services Manager.

   - Other errors identified by inspection of the log files created by Setup.

NOTE Not all error conditions can be resolved in this way. It may be necessary to uninstall the Process Engine software and re-run setup.

8. When the dialog box informs you that Process Engine has been successfully installed, click **OK**.

9. Oracle database only: When prompted, enter the Oracle sys password. The password is required to run the SQL script pe_setup_users_defaults.sql. For further information about this script, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

    NOTE If an error message indicates that the script did not run, or you are not prompted for the sys password, you must resolve any errors and run the script manually. See "Process Engine SQL Scripts (Oracle databases only)" on page 369.

10. Check all log files and verify that there were no errors or failures. Correct any errors before proceeding. Log files to check include:

    •   All **.lst** files in the **<install drive>:\fnsw** directory (Oracle databases only)

    •   All **.log** files in **\fnsw_loc\logs** directory and subdirectories

11. Proceed to "Complete additional configuration" on page 164.

Complete additional configuration

Process Engine Setup automatically creates several internally required, local administrative users. (These local users have no corresponding LDAP accounts.) Because these users are created with default passwords, IBM strongly recommends resetting their passwords to maintain system security on each Process Engine.

> For users other than fnsw, see the IBM FileNet Image Services documentation for instructions on using the referenced tools to change passwords.

User Name	User Type	Description	How to modify
f_maint	Database (Oracle, SQL)	Has DBA privileges. Used for RDBMS maintenance.	Execute set_f_maint_pw. See steps below.
fnsw	Operating System	Primary Process Engine user. Used to execute Process Engine software and Services.	Execute Windows Control Panel -> Administrative Tools -> Computer Management ->System Tools ->Local Users and Groups. After you change the password for the fnsw user, you must also use the Windows Services tool to update the Log On tab for the IMS ControlService and the Process Engine Services Manager accordingly (because the fnsw user is used to start those services). **NOTE** Process Engine activity will cease if the fnsw user's password expires.
SysAdmin	SEC (internal Process Engine security software)	Primary administrator user for FileNet software tools.	Execute Xapex -> Security Administration. Log on as SysAdmin. **NOTE** Process Engine software must be running.
FieldService	SEC	Used internally by Process Engine software.	
Operator	SEC	Used internally by Process Engine software.	

Set the f_maint password (Oracle and SQL)

1. Log on as the **fnsw** user or as a member of the local Administrators group or a user with equivalent permissions.

2. At a command prompt, enter:

    set_f_maint_pw

3. Press **Return** at the prompt for the current password.

4. Enter a new password for f_maint when prompted. The password must be between 6 and 30 characters. If the database is MS SQL, the first character cannot be numeric.

5. Confirm the new password when prompted.

Verify the /etc/services file settings

1. Log in as the **Administrator** user and check the **\WINNT\system32\drivers\etc\services** file to verify the following parameters:

    ```
    tms        32768/tcp
    cor        32769/tcp
    nch        32770/udp
    fn_snmpd   161/udp
    fn_trapd   35225/udp
    ```

2. If necessary, add the parameters to the file and save the changes.

Verify TCP/IP parameter settings

1. Log in as the **Administrator** user and run **regedit** to verify the following registry key values.

    HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\MaxUserPort => 65535 (default = 5000)
    HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\TcpTimedWaitDelay => 90 (default = 240, or 4 min)

2. If necessary, add or modify the parameters and save the changes. The value added should be DWORD.

Delete unnecessary users/groups (Oracle and SQL)

Process Engine Setup automatically creates several users (listed below) in the database. The Process Engine software does not require these users, so you can safely delete them.

- f_sqi

- f_operator

- f_cso

- f_open

(Optional. Oracle database only) Delete fnsw and oracle users from the ORA_DBA group

Remove the **fnsw** and **oracle** users from the ORA_DBA group.

To redirect log messages to the Image Services error log

Enable the redirection of log messages to the Image Services error log. This redirection will log message to the Image Services error log as well as to the default Windows Event Log. By

enabling this redirection, you will be able to monitor the progress of the database object upgrade in a command window.

To enable the redirection, change the LogToFiles value from 0 to 1 for the following registry key.

```
HKEY_LOCAL_MACHINE>SOFTWARE>FileNET>IMS>CurrentVersion
```

Start the Process Engine software

By default, the IMS Control Services Manager and Process Engine Services Manager are automatically started on system restart. However, the Process Engine software itself must be manually started or configured for automatic start. To start the software, take the following steps:

1. Log on as **fnsw** or as a member of the local Administrators group (or a user with equivalent permissions). The default password is BPMPassword1.

2. Start **Programs > FileNet P8 Platform > Process Engine > Process Task Manager.**

3. To start the Process Service, from the **Action** menu, choose **Start.**

Task 11b: Install Process Engine (Solaris)

NOTES

* Before beginning this task, ensure that all applicable tasks listed in the "Installation Planning Considerations" on page 20 have been completed.

* There are references to logging on as the **root** and **fnsw** users within these procedures. The root user must run in the Bourne or Korn shell and the fnsw user must run in the Korn shell.

* Be sure to have the correct database information including server names, database and instance names, tablespace names, and filegroups. Entering incorrect information during Process Engine installation could cause the installation to fail. Recovery could mean uninstalling and re-installing the Process Engine software.

Increase the Operating System Kernel Limits

1. Make a copy of the **system** file (with a new name). Log on as **root**, and enter a command similar to the following:

   ```
   cp /etc/system /etc/system.save
   ```

2. Edit the /etc/system file, using your preferred editor (for example, vi):

   ```
   vi /etc/system
   ```

3. Ensure that the following parameters are listed and are set to at least the values shown. With the exception of the value described in the Note below, you can enter higher values if your system requires them.

   ```
   set semsys:seminfo_semmap=50
   set semsys:seminfo_semmni=2000
   set semsys:seminfo_semmns=2000
   set semsys:seminfo_semmnu=500
   set semsys:seminfo_semmsl=512
   set semsys:seminfo_semopm=256
   set semsys:seminfo_semume=500
   set semsys:seminfo_semvmx=32767
   set semsys:seminfo_semaem=16384
   set shmsys:shminfo_shmmax=20971520
   set shmsys:shminfo_shmmin=0
   ```

   NOTE The shminfo_shmmin value must be set to 0 or the Process Engine installation will fail. While you can change this value after installation, IBM does not recommend setting this value higher than 1.

   ```
   set shmsys:shminfo_shmmni=2000
   set shmsys:shminfo_shmseg=100
   set msgsys:msginfo_msgmni=2048
   set max_nprocs=1000
   set fnsod:sod_Debug=0
   set rlim_fd_max=1024
   set rlim_fd_cur=256
   ```

4. Save your changes.

5. Reboot the server.

Create or modify internal Process Engine users and groups

Using Solaris' admintool, you must create or modify specific local groups and users required internally by

Process Engine prior to running Process Engine Setup. These required users and groups are detailed in the following tables. After making the changes, log out and log back in to pick up the changes. (Solaris uses the directory in the root file system called **/home** as users' home directory. If you want to use **/home**, you will have to make a file system for it.).

User Name	Action	User Type	Default Shell	Primary Group	Secondary Group
fnsw	Create	Operating System	Ksh	fnusr	<Oracle Database Administrators Group; default = *dba*>, fnadmin
root	Modify	Operating System	Ksh		fnusr, fnadmin
<Oracle User; default = *oracle*>	Modify, if database is local.

Create, if database is remote. | Database | | <Oracle Database Administrators Group; default = *dba*> | fnusr |

Group Name	Action	Description	Members
fnadmin	Create	Members have all privileges on Process Engine files and databases.	fnsw, root
fnusr	Create	Members have non-administrator privileges on Process Engine files and databases.	fnsw, root, <Oracle User; default = *oracle*>
<Oracle Database Administrators Group; default = *dba*>	Modify, if database is local.

Create, if database is remote. | Members act as database administrators. | fnsw, <Oracle User; default = *oracle*> |

Verify National Language Character Set and Time Settings

• The default time mask varies on UNIX depending on the LANG and LC_TIME environment settings. Verify the current LC_TIME settings by entering:

```
locale -k t_fmt
```

The result might appear similar to this:

```
t_fmt=%r
```

- The default mask must not be "%r". To change to a default mask that can be used with NLT, reset the LC_TIME environment to "C", then run the **locale -k t_fmt** command again to verify the change.

- The default shell environment should be modified to use the C time format.

- Change the **/etc/profile** for the entire system or change .profile files for each user that runs sh or ksh to include the following lines:

```
LC_TIME=C
export LC_TIME
```

- Verify the current LANG settings by entering:

```
locale
```

- This example shows the U.S. character set, ISO 8859-1. Be sure the character set specified on your server is appropriate for your locale. Also be sure it is consistent with the NLS_LANG if the character set is AL32UTF8.

```
LANG=en_US.ISO8859-1
LC_CTYPE=en_US.ISO8859-1
LC_NUMERIC=en_US.ISO8859-1
LC_TIME=en_US.ISO8859-1
LC_COLLATE=en_US.ISO8859-1
LC_MONETARY=en_US.ISO8859-1
LC_MESSAGES=en_US.ISO8859-1
LC_ALL=
```

Create Partitions

Process Engine requires the presence of the several partitions. You can use third-party software such as Veritas Volume Management to create these partitions, or software provided with the operating system, such as Solstice DiskSuite, to create soft partitions. Regardless of the tool you use, each partition has requirements for the mount point, size, user, group, and mode; these requirements are specified in the following tables. (The first table provides guidelines for Veritas Volume Management users, the second for Solstice DiskSuite users.) There are no requirements for the partition names; the names listed in the tables are examples.

Volume Name	Mount Point	Minimum Size	User	Group	Mode
fnsw	**/fnsw** file system	1000MB	fnsw	fnusr	775
local	**/fnsw/local** file system	250MB	fnsw	fnusr	775
fn_sec_db0 (raw)	n/a logical volume	12MB	fnsw	fnusr	664
fn_sec_rl0 (raw)	n/a logical volume	4MB	fnsw	fnusr	664

Following is an example of soft partitions created using Solstice DiskSuite. Partitions d100 and d101 will be used as fn_sec_db0 and fn_sec_rl0.

Soft Partition	Mount Point	Minimum Size	User	Group	Mode
d1	**/fnsw** file system	1000MB	fnsw	fnusr	775
d2 (optional)	**/fnsw/local** file system	250MB	fnsw	fnusr	775
d100	raw, none	12MB	fnsw	fnusr	664
d101	raw, none	4MB	fnsw	fnusr	664

Verify the database connection (Oracle)

The database that Process Engine will use must be running and be fully configured for IBM FileNet use before you run Process Engine Setup. In addition, if the database is remote, the database client software must also be installed and running on Process Engine when Process Engine Setup is started. See Task 5b on page 63 task for database installation and configuration procedures.

Take the following steps to verify that the Oracle database you want Process Engine to use is accessible. Make whatever corrections are necessary before running Process Engine Setup.

1. Execute the following at a command prompt:

   su - oracle -c "sqlplus"

2. At the SQLPlus prompt, enter a DBA userid and password.

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

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

Following is an example of the information returned:

   INSTANCE_NAME

   HOST_NAME

   VERSION

   ----

   p8dbshr
   HQVWBUCS
   9.2.0.7.0

In this example:

the instance, ORACLE_SID=p8dbshr

the database server name is hqvwbucs

the oracle server version is 9.2.0.7

Verify the database connection (DB2)

1. Log on as the client instance owner.

2. Execute the following at a command prompt:

   ```
   db2
   ```

3. At the DB2 prompt, enter the following command:

   ```
   connect to <database alias> user f_sw using <f_sw password>
   ```

   DB2 will display the database connection information.

Following is an example of the database connection command and the information returned:

db2 => connect to pedbinst user f_sw using f_sw

   Database Connection Information

Database server   = DB2/AIX64 8.2.0
SQL authorization ID = F_SW
Local database alias = PEDBINST

In this example, the database alias is pedbinst and the f_sw user password is f_sw.

Install the Process Engine software

1. Log on to the server as the **root** user.

2. Insert the Process Engine CD. From the console, navigate to the **/cdrom/p8pe35sol** directory and execute **setup.sh**.

3. Indicate whether the database will be Oracle or DB2. Wait for files to finish unpacking.

   If Process Engine uses an Oracle database, continue with Step 4.

   If Process Engine uses a DB2 database, proceed to Step 5.

4. When prompted, enter the Oracle sys password. The password is required to run the following SQL scripts: **pe_install_scripts.sql**, **pe_filenet_site.sql**, **pe_create_stored_procedures.sql**, and **pe_grant_sp_permissions.sql**. For further information about these scripts, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

   NOTE If an error message indicates that the scripts did not run, you must resolve the errors before proceeding. See "Process Engine SQL Scripts (Oracle databases only)" on page 369.

5. A sequence of installation screens will be presented. Refer to the tables below for information on the screens you will see and the steps to take.

In this screen...	Perform this action...
Welcome	Click **Next** on the Welcome screen to proceed with the installation
Software License Agreement	Review and accept the license agreement for IBM FileNet P8 software products, and then click **Yes**. You must accept the terms of the agreement to proceed with the installation.
Documentation Configuration	Enter the Documentation Server URL, which is where the IBM FileNet P8 Platform Documentation was installed. Your entry must be in the following format: http://*<docserver:port#>/<ecm_help>* where: *docserver* is the name of the Java web server. *port#* is the port number. *ecm_help* is the root folder of the documentation website. You can use multi-part root folders (e.g.,**/docs/ecm_help**) if your application server supports them.
Rules Engine Support	Indicate whether you want to configure the Rules Engine interface to run on this Process Engine. Click **Yes** if the JRules software is already installed on this computer or if you know where on this computer JRules will be installed later. Click **No** if the JRules software is not and will not be installed on this computer, or if you do not know exactly where on this computer JRules will be installed later. If you later install JRules software on this Process Engine, follow the procedures in "Enable Rules Engine integration manually" on page 281 to enable Rules Engine integration manually.
Choose Destination Location **NOTE** This window is displayed only if you click Yes in the Select Components window to install iLog JRules.	Enter the full path to the iLog JRules software installation directory. The directory you specify must already exist. Later during installation (in "Enable Rules Engine integration" on page 279), you will finish setting up Rules Engine integration.
Common Files	Choose the destination directory for configuration files that will be shared with other IBM FileNet P8 components.

In this screen...	Perform this action...
Domain Name	Enter *<domain name>*:*<organization>*, where:
	The maximum length of your *<domain name>* entry does not exceed 20 characters.
	The maximum length of your *<organization>* entry does not exceed 20 characters.
	Both your *<domain name>* and *<organization>* entries contain only alphanumeric characters and underscores.
	A typical convention is to enter *<your PE machine name>*:FileNet. If the machine name includes hyphens, replace them with underscores in your entry.
Primary Server Selection	Leave the box checked indicating that this is the primary Process Engine.
Local or Remote RDBMS	Indicate whether the database will be local or remote.
	Depending upon your selection here you will be presented with a number of additional screens appropriate to database location and database software. Proceed as appropriate to:
	• "Remote DB2 database" on page 174
	• "Remote Oracle database" on page 174
	• "Local Oracle database" on page 175
	NOTE Only remote DB2 databases are supported.
Database Selection Confirmation	This screen is presented as a confirmation of the type of database you chose to configure. As directed in this screen, if you choose to change the database type, choose **Cancel** in this screen and re-run setup. Otherwise click **Next** to proceed.

Remote DB2 database

In this screen...	Perform this action...
Database Alias Name	Enter the database alias name as assigned in "Install DB2 Client for Content Engine and Process Engine" on page 77.
Local DB2 instance owner name	Enter the DB2 client instance owner's name. Case sensitive.
FileNet Data Tablespace name	defaults to VWDATA_TS
DB2 Passwords	Enter the passwords for the Operating System **f_sw** and **f_maint** users. Enter the passwords set for these users in either "Install DB2 server for Content Engine and Process Engine" on page 68 if database authentication is SERVER or SERVER_ENCRYPT, or "Install DB2 Client for Content Engine and Process Engine" on page 77 if authentication is CLIENT.

Remote Oracle database

In this screen...	Perform this action...
Oracle Environment Variables	Enter the appropriate values for the Global Database name, Oracle Home, User Name, Oracle SID, Oracle DBA group name The Oracle Home path you enter refers to the local Oracle Client installation directory.
Oracle Database Information	Enter the Oracle tablespace to be used by Process Engine for temporary data. Default value is VWTEMP_TS. Enter the Oracle tablespace to be used for Process Engine data. Default value is VWDATA_TS Enter the optional tablespace to be used by Process Engine for indexes. The data tablespace will be used if no index tablespace is designated. Default value is VWINDEX_TS. All entries must match the value you used when the temporary tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63.

Local Oracle database

In this screen...	Perform this action...
Oracle Environment Variables	Enter the appropriate values for the Oracle Home, User Name, Oracle SID, Oracle DBA group name
	The Oracle Home path you enter refers to the local Oracle Client installation directory.
Oracle Database Information	Enter the Oracle tablespace to be used by Process Engine for temporary data. Default value is VWTEMP_TS.
	Enter the Oracle tablespace to be used for Process Engine data. Default value is VWDATA_TS
	Enter the optional tablespace to be used by Process Engine for indexes. The data tablespace will be used if no index tablespace is designated. Default value is VWINDEX_TS.
	All entries must match the value you used when the temporary tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63.

6. Enter the raw device file names for the fn_SEC_DB0 and fn_SEC_RL0 volumes. For example, if Solstice DiskSuite software was used, and fn_SEC_DB0 was on the d100 raw device, the entry would be:

    /dev/md/rdsk/d100

7. Review the information on the installation process. Note that you can check the progress of the installation in the **/fnsw/tmp-installer/MINI-INSTALLER.LOG** file. Click **Next** when you are ready to proceed.

8. Review the summary information on the installation location for Process Engine. Click **Next** when you are ready to proceed.

9. Setup will run for several minutes. Progress is displayed and at some points may not advance for an extended period of time. To check the progress of the installation, monitor the **/fnsw/tmp-installer/ MINI-INSTALLER.LOG** file for current activity.

    If the installation failed, check the **/fnsw/tmp_installer/MINI_INSTALLER_ERROR.LOG** file for errors.

10. (Oracle database only) When prompted, enter the Oracle sys password. The password is required to run the **SQL script pe_setup_users_defaults.sql**. For further information about this script, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

    NOTE If an error message indicates that the script did not run, or you are not prompted for the sys password, you must resolve any errors and run the script manually. See "Process Engine SQL Scripts (Oracle databases only)" on page 369.

11. Check all log files and verify that there were no errors or failures. Correct any errors before proceeding. Log files to check include:

- All **.lst** and **.log** files in the **/fnsw/local/logs/PE** directory

- All **.log** files in the **/fnsw/local/logs** directory and **all its subdirectories**

Reset administrative user passwords

Process Engine Setup automatically creates several internally required, local administrative users. These local users have no corresponding LDAP accounts. Because these users are created with default passwords, IBM strongly recommends resetting the passwords for these users to maintain system security. See the IBM FileNet Image Services documentation for instructions on using the referenced tools.

User Name	User Type	Description	How to modify
f_maint	Database (Oracle)	Has DBA privileges. Used for RDBMS maintenance.	Execute set_f_maint_pw. See steps below.
SysAdmin	SEC (internal Process Engine security software)	Primary administrator user for FileNet software tools.	Execute Xapex -> Security Administration. Log on as SysAdmin.
FieldService	SEC	Used internally by Process Engine software.	
Operator	SEC	Used internally by Process Engine software.	

Set the f_maint password (Oracle only)

1. Log on as the **fnsw** user.

2. At a command prompt, enter:

   set_f_maint_pw

3. Press **Return** at the prompt for the current password.

4. Enter a new password for f_maint when prompted. The password must be between 6 and 30 characters.

5. Confirm the new password when prompted.

Delete unnecessary users

Process Engine Setup automatically creates several users (listed below) in the database. The Process Engine software does not require these users, so you can safely delete them.

- f_sqi

- f_operator

- f_cso

- f_open

(Optional. Oracle databases only) Delete fnsw user from the Oracle database administrators group

Remove the **fnsw** user from the *<Oracle Database Administrators>* group.

Enable ports

When Solaris starts up, it takes the first several ports, called anon ports, to use for its communication daemons. By default, the maximum tcp_smallest_anon_port is 32768. IBM FileNet uses several ports higher than 32768. See "IBM FileNet P8 Port Numbers" on page 364 for details on which ports IBM FileNet uses.

To use these ports on Solaris-based systems, you must first enable the ports by setting the smallest anon port to 32777. By doing so, the ports used by Solaris communication daemons will be 32777 or greater, leaving 32776 available for IBM FileNet use.

The Solaris platform provides several different tools such as the netstat command to determine if a port is in use.

To determine the current tcp_smallest_anon_port setting enter the following at the command prompt:

```
ndd -get /dev/tcp tcp_smallest_anon_port
```

If the port is less than 32777, you must enable port 32776.

To enable port 32776 on Solaris, use a text editor to edit the /etc/rc2.d/S69inet file.

Enter the following line:

```
ndd -set /dev/tcp tcp_smallest_anon_port 32777
```

Reboot the Process Engine server.

Restore any custom modifications to the .profile or .cshrc.

Process Engine Setup creates a new .profile or .cshrc file. If the previous versions of these files contained any custom settings, edit the new .profile or .cshrc file for the fnsw, root and oracle users accordingly. Saved files in are .profile.old.nn or .cshrc.old.nn, where nn is a sequential number. The latest saved version will be in the highest numbered file.

Verify the /etc/services file settings

1. Log in as the **root** user and check the **/etc/services** file to verify the following parameters:

   ```
   tms        32768/tcp
   cor        32769/tcp
   nch        32770/udp
   fn_snmpd  161/udp
   fn_trapd   35225/udp
   ```

2. If necessary, add the parameters to the file and save the changes.

Clean up before starting Process Engine

1. Log in as **fnsw.**

2. Execute:

   ```
   vwzap
   ```

3. Execute:

   ```
   killfnsw -DAyS
   ```

4. Execute:

   ```
   ipcs -a
   ```

   and verify there is no entry with 0x464 pattern.

   If there are any entries with this pattern, use ipcim to remove them.

Edit the /etc/inittab file

By default, the Process Engine software starts automatically on restart and needs to have the database already started when Process Engine comes up. If the database is not automatically started on restart, edit the **/etc/inittab** file on Process Engine to comment out the autostart of Process Engine.

Change:

   fn:3:wait:/bin/sh /etc/rc.initfnsw </dev/console >/dev/console 2>&1

to

   #fn:3:wait:/bin/sh /etc/rc.initfnsw </dev/console >/dev/console 2>&1

Verify that the database and Process Engine software are running

Be sure that both the database and Process Engine software are running before proceeding to the next task. By default, the IMS Control Services Manager and Process Engine Services Manager are automatically started on system restart. However, the Process Engine software itself must be manually started. To start the software, take the following steps:

1. Log on as fnsw.

2. Start Process Task Manager by entering the following at the command prompt:

   ```
   vwtaskman
   ```

3. From the Action menu, choose **Start**.

Task 11c: Install Process Engine (AIX)

NOTES

- Before beginning this task, ensure that all applicable tasks listed in the "Installation Planning Considerations" on page 20 have been completed.

- There are references to logging on as the **root** and **fnsw** users within these procedures. The root user must run in the Bourne or Korn shell and the fnsw user must run in the Korn shell.

- Be sure to have the correct database information including server names, database and instance names, tablespace names, and filegroups. Entering incorrect information during Process Engine installation could cause the installation to fail. Recovery could mean uninstalling and re-installing the Process Engine software.

Set Time Zone Parameters

Review and change the time zone parameters if necessary. In SMIT, choose System Environments -> Change/Show Date and Time -> Change Time Zone Using System Defined Values. Choose the Daylight Savings Time option if applicable. At the CUT Time Zone menu, choose the option associated with your site. For example, in California, the time zone needs to be set to the Pacific time zone (PST8PDT) Pacific U.S.; Yukon (cut -8).

Modify /etc/rc.net for AIX 5.1

1. As the **root** user, add the following statements at the end for /etc/rc.net file:

   ```
   # setup for IS requirement
   if [ -f /usr/sbin/no ] ; then
   /usr/sbin/no -o tcp_sendspace=16384
   /usr/sbin/no -o tcp_recvspace=16384
   /usr/sbin/no -o tcp_keepidle=80
   /usr/sbin/no -o tcp_keepintvl=20
   /usr/sbin/no -o tcp_ephemeral_high=65535
   /usr/sbin/no -o tcp_ephemeral_low=42767
   /usr/sbin/no -o udp_ephemeral_high=65535
   /usr/sbin/no -o udp_ephemeral_low=42767
   fi
   ```

2. Restart the server (shutdown -Fr) for these settings to take effect.

3. Check the values by executing:

   ```
   no -a | grep ephemeral
   ```

Modify /etc/rc.dt and /etc/tunables/nextboot for AIX 5.2 and 5.3

1. As the **root** user, execute the following commands:

    /usr/sbin/no -p -o tcp_sendspace=16384
    /usr/sbin/no -p -o tcp_recvspace=16384
    /usr/sbin/no -p -o tcp_keepidle=80
    /usr/sbin/no -p -o tcp_keepintvl=20
    /usr/sbin/no -p -o tcp_ephemeral_high=65535
    /usr/sbin/no -p -o tcp_ephemeral_low=42767
    /usr/sbin/no -p -o udp_ephemeral_high=65535
    /usr/sbin/no -p -o udp_ephemeral_low=42767

    or set them by editing the /etc/tunables/nextboot.

2. Add the following statements at the beginning for /etc/rc.dt file:

    /usr/sbin/no -o tcp_sendspace=16384
    /usr/sbin/no -o tcp_recvspace=16384
    /usr/sbin/no -o tcp_keepidle=80
    /usr/sbin/no -o tcp_keepintvl=20
    /usr/sbin/no -o tcp_ephemeral_high=65535
    /usr/sbin/no -o tcp_ephemeral_low=42767
    /usr/sbin/no -o udp_ephemeral_high=65535
    /usr/sbin/no -o udp_ephemeral_low=42767

3. Restart the server (shutdown -Fr) for these settings to take effect.

4. Check the values by executing:

    no -a | grep ephemeral

Create or modify internal Process Engine users and groups

You must create or modify specific local groups and users required internally by Process Engine prior to running Process Engine Setup. These required users and groups are detailed in the following tables. After making the changes, log out and log back in to pick up the changes.

Because AIX does not allow users to create a group with an empty member list, you must create these groups and users in the following order:

*   Create the fnusr group with root and Oracle User as its members.

*   Create the fnsw user with fnusr as its primary group.

- Create the fnadmin group with fnsw and root as its members.

User Name	Action	User Type	Default Shell	Primary Group	Secondary Group
fnsw	Create	Operating System	Ksh	fnusr	<Oracle Database Administrators Group; default = *dba*>, fnadmin
root	Modify	Operating System	Ksh		fnusr, fnadmin
<Oracle User; default = *oracle*>	Modify, if database is local. Create, if database is remote.	Database		<Oracle Database Administrators Group; default = *dba*>	fnusr

Group Name	Action	Description	Members
fnadmin	Create	Members have all privileges on Process Engine files and databases.	fnsw, root
fnusr	Create	Members have non-administrator privileges on Process Engine files and databases.	fnsw, root, <Oracle User; default = *oracle*>
<Oracle Database Administrators Group; default = *dba*>	Modify, if database is local. Create, if database is remote.	Members act as database administrators.	fnsw, <Oracle User; default = *oracle*>

Create Partitions

Process Engine requires the presence of several partitions. The following table documents the requirements.

Volume Name	Mount Point	Minimum Size	User	Group	Mode
fnsw	/fnsw file system	1000MB	fnsw	fnusr	775
local	/fnsw/local file system	250MB	fnsw	fnusr	775
fn_sec_db0 (raw)	n/a logical volume	12MB	fnsw	fnusr	664
fn_sec_rl0 (raw)	n/a logical volume	4MB	fnsw	fnusr	664

Verify the database connection (Oracle)

The database that Process Engine will use must be running and be fully configured for IBM FileNet use before you run Process Engine Setup. In addition, if the database is remote, the database client software must also be installed and running on Process Engine when Process Engine Setup is started. See "Install Oracle Server for IBM FileNet P8" on page 63 task for database installation and configuration procedures.

Take the following steps to verify that the Oracle database you want Process Engine to use is accessible. Make whatever corrections are necessary before running Process Engine Setup.

1. Execute the following at a command prompt:

    su - oracle -c "sqlplus"

2. At the SQLPlus prompt "Enter user-name", enter "sys as sysdba".

3. When prompted for a password, enter the password for the sys account.

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

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

Following is an example of the information returned:

INSTANCE_NAME

HOST_NAME

VERSION

----

p8dbshr
HQVWBUCS
9.2.0.7.0

In this example:

the instance, ORACLE_SID=p8dbshr

the database server name is hqvwbucs

the oracle server version is 9.2.0.7

Verify the database connection (DB2)

1. Log on as the client instance owner.

2. Execute the following at a command prompt:

   db2

3. At the DB2 prompt, enter the following command:

   connect to <*database alias*> user f_sw using <*f_sw password*>

   DB2 will display the database connection information.

Following is an example of the database connection command and the information returned:

>   db2 => connect to pedbinst user f_sw using f_sw
>
>   Database Connection Information
>
>   Database server   = DB2/AIX64 8.2.0
>   SQL authorization ID = F_SW
>   Local database alias = PEDBINST

In this example, the database alias is pedbinst and the f_sw user password is f_sw.

Install the Process Engine software

1. Log on to the server as the **root** user.

2. Set the DISPLAY environment variable.

3. Insert the Process Engine CD.

4. Create a directory to mount the CD-ROM drive if you have not already done so:

    mkdir /cdrom

5. Mount the CD-ROM drive to that directory:

    mount -rv cdrfs /dev/cd0 /cdrom

    where /dev/cd0 is the appropriate device name.

6. Verify that the CD-ROM mounted correctly, type:

    mount

7. From the console, navigate to the /cdrom directory and execute **setup.sh**.

8. Indicate whether the database will be Oracle or DB2. Wait for files to finish unpacking

    If Process Engine uses an Oracle database, continue with Step 9.

    If Process Engine uses a DB2 database, proceed to Step 10.

9. When prompted, enter the Oracle sys password. The password is required to run the following SQL scripts: pe_install_scripts.sql, pe_filenet_site.sql, pe_create_stored_procedures.sql, and pe_grant_sp_permissions.sql. For further information about these scripts, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

    NOTE If an error message indicates that the scripts did not run, you must resolve the errors before proceeding. See "Process Engine SQL Scripts (Oracle databases only)" on page 369.

10. A sequence of installation screens will be presented. Refer to the tables below for information on the screens you will see and the steps to take..

In this screen...	Perform this action...
Welcome	Click **Next** on the Welcome screen to proceed with the installation
Software License Agreement	Review and accept the license agreement for IBM FileNet P8 software products, and then click **Yes**. You must accept the terms of the agreement to proceed with the installation.

In this screen...	Perform this action...
Documentation Configuration	Enter the Documentation Server URL, which is where the IBM FileNet P8 Platform Documentation was installed. Your entry must be in the following format: http://*<docserver:port#>*/*<ecm_help>* where: *docserver* is the name of the Java web server. *port#* is the port number. *ecm_help* is the root folder of the documentation website. You can use multi-part root folders (e.g.,/docs/ecm_help) if your application server supports them.
Rules Engine Support	Indicate whether you want to configure the Rules Engine interface to run on this Process Engine. Click **Yes** if the JRules software is already installed on this computer or if you know where on this computer JRules will be installed later. Click **No** if the JRules software is not and will not be installed on this computer, or if you do not know exactly where on this computer JRules will be installed later. If you later install JRules software on this Process Engine, follow the procedures in "Enable Rules Engine integration manually" on page 281 to enable Rules Engine integration manually.
Choose Destination Location **NOTE** This window is displayed only if you click Yes in the Select Components window to install iLog JRules.	Enter the full path to the iLog JRules software installation directory. The directory you specify must already exist. Later during installation (in "Enable Rules Engine integration" on page 279), you will finish setting up Rules Engine integration.
Common Files	Choose the destination directory for configuration files that will be shared with other IBM FileNet P8 components.
Domain Name	Enter *<domain name>*:*<organization>*, where: The maximum length of your *<domain name>* entry does not exceed 20 characters. The maximum length of your *<organization>* entry does not exceed 20 characters. Both your *<domain name>* and *<organization>* entries contain only alphanumeric characters and underscores. A typical convention is to enter *<your PE machine name>*:FileNet. If the machine name includes hyphens, replace them with underscores in your entry.

In this screen...	Perform this action...
Primary Server Selection	Leave the box checked indicating that this is the primary Process Engine.
Local or Remote RDBMS	Indicate whether the database will be local or remote. Depending upon your selection here you will be presented with a number of additional screens appropriate to database location and database software. Proceed as appropriate to: • "Remote DB2 database" on page 187 • "Remote Oracle database" on page 187 • "Local Oracle database" on page 188 **NOTE** Only remote DB2 databases are supported.
Database Selection Confirmation	This screen is presented as a confirmation of the type of database you chose to configure. As directed in this screen, if you choose to change the database type, choose **Cancel** in this screen and re-run setup. Otherwise click **Next** to proceed.

Remote DB2 database

In this screen...	Perform this action...
Database Alias Name	Enter the database alias name as assigned in "Install DB2 Client for Content Engine and Process Engine" on page 77.
Local DB2 instance owner name	Enter the DB2 client instance owner's name. Case sensitive.
FileNet Data Tablespace name	defaults to VWDATA_TS
DB2 Passwords	Enter the passwords for the Operating System **f_sw** and **f_maint** users. Enter the passwords set for these users in either "Install DB2 server for Content Engine and Process Engine" on page 68 if database authentication is SERVER or SERVER_ENCRYPT, or "Install DB2 Client for Content Engine and Process Engine" on page 77 if authentication is CLIENT.

Remote Oracle database

In this screen...	Perform this action...
Oracle Environment Variables	Enter the appropriate values for the Global Database name, Oracle Home, User Name, Oracle SID, Oracle DBA group name The Oracle Home path you enter refers to the local Oracle Client installation directory.
Oracle Database Information	Enter the Oracle tablespace to be used by Process Engine for temporary data. Default value is VWTEMP_TS. Enter the Oracle tablespace to be used for Process Engine data. Default value is VWDATA_TS Enter the optional tablespace to be used by Process Engine for indexes. The data tablespace will be used if no index tablespace is designated. Default value is VWINDEX_TS. All entries must match the value you used when the temporary tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63.

Local Oracle database

In this screen...	Perform this action...
Oracle Environment Variables	Enter the appropriate values for the Oracle Home, User Name, Oracle SID, Oracle DBA group name
	The Oracle Home path you enter refers to the local Oracle Client installation directory.
Oracle Database Information	Enter the Oracle tablespace to be used by Process Engine for temporary data. Default value is VWTEMP_TS.
	Enter the Oracle tablespace to be used for Process Engine data. Default value is VWDATA_TS
	Enter the optional tablespace to be used by Process Engine for indexes. The data tablespace will be used if no index tablespace is designated. Default value is VWINDEX_TS.
	All entries must match the value you used when the temporary tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63.

11. Review the information on the installation process. Note that you can check the progress of the installation in the /fnsw/tmp-installer/MINI-INSTALLER.LOG file. Click **Next** when you are ready to proceed.

12. Review the summary information on the installation location for Process Engine. Click **Next** when you are ready to proceed.

13. Setup will run for several minutes. Progress is displayed and at some points may not advance for an extended period of time. To check the progress of the installation, monitor the /fnsw/tmp-installer/MINI-INSTALLER.LOG file for current activity.

    If the installation failed, check the /fnsw/tmp_installer/MINI_INSTALLER_ERROR.LOG file for errors.

14. (Oracle only) When prompted, enter the Oracle sys password. The password is required to run the SQL script pe_setup_users_defaults.sql. For further information about this script, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

    NOTE If an error message indicates that the script did not run, or you are not prompted for the sys password, you must resolve any errors and run the script manually. See "Process Engine SQL Scripts (Oracle databases only)" on page 369.

15. Check all log files and verify that there were no errors or failures. Correct any errors before proceeding. Log files to check include:

    • All **.lst** and **.log** files in the **/fnsw/local/logs/PE** directory

    • All **.log** files in the **/fnsw/local/logs** directory and **all its subdirectories**

Reset administrative user passwords

During Process Engine software installation, several local users required internally by Process Engine are automatically created. To maintain security, IBM strongly recommends resetting the passwords for these users. The following table lists the users created, the level of system access each user has, and the tool

used to change the password. See the IBM FileNet Image Services documentation for instructions on using the referenced tools.

User Name	User Type	Description	How to modify
f_maint	Database (Oracle)	Has DBA privileges. Used for RDBMS maintenance.	Execute set_f_maint_pw. See steps below.
SysAdmin	SEC (internal Process Engine security software)	Primary administrator user for FileNet software tools.	Execute Xapex -> Security Administration. Log on as SysAdmin.
FieldService	SEC	Used internally by Process Engine software.	
Operator	SEC	Used internally by Process Engine software.	

Set the f_maint password (Oracle only)

1. Log on as the **fnsw** user.

2. At a command prompt, enter:

   set_f_maint_pw

3. Press **Return** at the prompt for the current password.

4. Enter a new password for f_maint when prompted. The password must be between 6 and 30 characters.

5. Confirm the new password when prompted.

Delete unnecessary users

Process Engine Setup automatically creates several users (listed below) in the database. The Process Engine software does not require these users, so you can safely delete them.

- f_sqi
- f_operator
- f_cso
- f_open

(Optional. Oracle databases only.) Delete fnsw user from the Oracle database administrators group

Remove the **fnsw** user from the <Oracle Database Administrators> group.

Restore any custom modifications to the .profile or .cshrc.

Process Engine Setup creates a new .profile or .cshrc file. If the previous versions of these files contained any custom settings, edit the new .profile or .cshrc file for the fnsw, root and oracle users accordingly.

Saved files in are .profile.old.nn or .cshrc.old.nn, where nn is a sequential number. The latest saved version will be in the highest numbered file.

Verify the /etc/services file settings

1. Log in as the **root** user and check the **/etc/services** file to verify the following parameters:

    ```
    smux        199/tcp                  # snmpd smux port
    tms         32768/tcp
    cor         32769/tcp
    nch         32770/udp
    fn_trapd     35225/udp
    ```

2. If necessary, add the parameters to the file and save the changes.

Clean up before starting Process Engine

1. Log in as **fnsw.**

2. Execute:

    vwzap

3. Execute:

    killfnsw -DAyS

4. Execute:

    ipcs -a

    and verify there is no entry with 0x464 pattern.

    If there are any entries with this pattern, use ipcim to remove them.

Edit the /etc/inittab file

By default, the Process Engine software starts automatically on restart and needs to have the database already started when Process Engine comes up. If the database is not automatically started on restart, edit the **/etc/inittab** file on Process Engine to comment out the autostart of Process Engine

    rcfnsw:2:once:/etc/rc.initfnsw 2>&1 | alog -tboot > /dev/console 2>&1

to

    #rcfnsw:2:once:/etc/rc.initfnsw 2>&1 | alog -tboot > /dev/console 2>&1

Verify that the database and Process Engine software are running

Be sure that both the database and Process Engine software are running before proceeding to the next task. By default, the IMS Control Services Manager and Process Engine Services Manager are automatically started on system restart. However, the Process Engine software itself must be manually started. To start the software, take the following steps:

1. Log on as fnsw.

2. Start Process Task Manager by entering the following at the command prompt:

        vwtaskman

3. From the Action menu, choose **Start**.

Task 11d: Install Process Engine (HP-UX)

NOTES

- Before beginning this task, ensure that all applicable tasks listed in the "Installation Planning Considerations" on page 20 have been completed.

- There are references to logging on as the **root** and **fnsw** users within these procedures. The root user must run in the Bourne or Korn shell and the fnsw user must run in the Korn shell.

- Be sure to have the correct database information including server names, database and instance names, tablespace names, and filegroups. Entering incorrect information during Process Engine installation could cause the installation to fail. Recovery could mean uninstalling and re-installing the Process Engine software.

Perform symbolic links for X11 libraries

1. Log on as the **root** user.

2. At the prompt, execute the following:

   cd /usr/lib
   ln -s /usr/lib/libX11.3 libX11.sl
   ln -s /usr/lib/libXIE.2 libXIE.sl
   ln -s /usr/lib/libXext.3 libXext.sl
   ln -s /usr/lib/libXhp11.3 libXhp11.sl
   ln -s /usr/lib/libXi.3 libXi.sl
   ln -s /usr/lib/libXm.4 libXm.sl
   ln -s /usr/lib/libXp.2 libXp.sl
   ln -s /usr/lib/libXt.3 libXt.sl
   ln -s /usr/lib/libXtst.2 libXtst.sl

Check and optionally modify the timezone settings

HP-UX has two timezone settings: the kernel parameter **timezone** and the environment variable **TZ**. The value of both timezone settings must match. Review and, if necessary, change these settings on all servers.

1. As the **root** user, enter:

   sam

2. Select the Kernel Configuration option.

3. Select the Configurable Parameters option, then check the **Pending Value** for the timezone parameter. The default value is 420 minutes west of Greenwich Mean Time (GMT), which is the U.S. Mountain timezone.

   Determine the number of minutes east or west of GMT for your location by multiplying the number of hours east or west of GMT by 60 minutes per hour. For example, the U.S. Pacific timezone is 8 hours west of GMT. Multiply 8 x 60 to get 480 minutes. If your timezone location is east of GMT, you should use a negative number. For example, Middle European Time is one hour east of GMT. Multiply -1 x 60 to get -60 minutes for MET (Middle European Time).

4. If the Pending Value for the timezone parameter is correct, proceed to step 6. To change the value, continue with Step 5.

5. To change the timezone kernel parameter value:

    a. Select the timezone parameter by pressing the **F3** key.

    b. Select the Modify Configurable Parameter option from the Actions menu and press **Return**.

    c. In the popup window that displays, the Specify New Formula/Value option should already be selected.

    d. Tab to the Formula/Value field and type the new value.

    e. Tab to **OK** and press **Return**. When the popup window disappears, you should see the new value in the Pending Value column.

    f. Rebuild the kernel to make your change take effect:

        i. Press the **F4** key to access the menu bar.

        ii. From the Action menu, select the Create a New Kernel option using the Arrow keys and press **Return**.

        iii. Answer **Yes** when prompted about creating the kernel now.

        iv. On the next screen, make sure the Move Kernel into Place and Shutdown/Reboot the System Now option is selected, tab to **OK** and press the **Return** key to reboot the system and make the new changes take affect.

6. As the **root** user, enter the following to check the current value of the TZ environment variable:

    /sbin/set_parms timezone

7. If the current setting is not correct, choose the appropriate timezone from the menus displayed. Remember that the value must match that of the timezone kernel parameter.

    If you change the current setting, you will be prompted to reboot the server.

NOTE If the HP-UX **set_parms** command is not available on your server, the System Administrator should consult the HP-UX operating system documentation to determine the appropriate way to set the TZ environment variable.

Configure kernel parameters

Ensure that the following parameters are set to at least the values shown unless otherwise noted. These values are sufficient to install and initialize the software but system tuning will be required, specifically for the nfiles and maxfiles parameters. See the following HP website for configuration details.

http://www.hp.com/products1/unix/java/infolibrary/prog_guide/java1/configuration.html

Kernel Parameter	Minimum Setting
maxdsiz	0x10000000 or 268435456 (256MB)
maxfiles	512
nproc	1005
maxuprc	400
nfile	1024
ninode	1085

Kernel Parameter	Minimum Setting
semmns	2000
semmni	2000
semmap	2002
shmmax	0x20000000 or 536870912 (512MB)
shmseg	120
semmnu	1000
semume	500
msgmni	2048
msgseg	6640
msgtql	6640
msgmap	6642
bufpages	0 (required by Oracle)
dbc_max_pct	1 to 10 (required by Oracle, the value can not be greater than 10)
dbc_min_pct	5 (required by Oracle)
fs_async	0 (required by Oracle)
maxfiles_lim	1024
nflocks	200
npty	60
o_sync_is_o_dsync	0
timezone	set appropriately See "Check and optionally modify the timezone settings" on page 191.

Create or modify internal Process Engine users and groups

Using SAM, you must create or modify specific local groups and users required internally by Process Engine prior to running Process Engine Setup. These required users and groups are detailed in the following tables. After making the changes, log out and log back in to pick up the changes.

User Name	Action	User Type	Default Shell	Primary Group	Secondary Group
fnsw	Create	Operating System	Ksh	fnusr	<Oracle Database Administrators Group; default = *dba*>, fnadmin
root	Modify	Operating System	Ksh		fnusr, fnadmin
<Oracle User; default = *oracle*>	Modify, if database is local. Create, if database is remote.	Database		<Oracle Database Administrators Group; default = *dba*>	fnusr

Group Name	Action	Description	Members
fnadmin	Create	Members have all privileges on Process Engine files and databases.	fnsw, root
fnusr	Create	Members have non-administrator privileges on Process Engine files and databases.	fnsw, root, <Oracle User; default = *oracle*>
<Oracle Database Administrators Group; default = *dba*>	Modify, if database is local. Create, if database is remote.	Members act as database administrators.	fnsw, <Oracle User; default = *oracle*>

Create Partitions

Process Engine requires the presence of several partitions. The following table documents the requirements.

Volume Name	Mount Point	Minimum Size	User	Group	Mode
fnsw	/fnsw file system	1000MB	fnsw	fnusr	775
local	/fnsw/local file system	250MB	fnsw	fnusr	775
fn_sec_db0 (raw)	n/a logical volume	12MB	fnsw	fnusr	664
fn_sec_rl0 (raw)	n/a logical volume	4MB	fnsw	fnusr	664

Verify the database connection (Oracle)

The database that Process Engine will use must be running and be fully configured for IBM FileNet use before you run Process Engine Setup. In addition, if the database is remote, the database client software must also be installed and running on Process Engine when Process Engine Setup is started. See task for database installation and configuration procedures.

Take the following steps to verify that the Oracle database you want Process Engine to use is accessible. Make whatever corrections are necessary before running Process Engine Setup.

1. Execute the following at a command prompt:

   su - oracle -c "sqlplus"

2. At the SQLPlus prompt, enter a DBA userid and password.

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

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

Following is an example of the information returned:

```
INSTANCE_NAME
----------------
HOST_NAME
----------------------------------------------------------------
VERSION
-----------------
p8dbshr
HQVWBUCS
9.2.0.7.0
```

In this example:

the instance, ORACLE_SID=p8dbshr

the database server name is hqvwbucs

the oracle server version is 9.2.0.7

Verify the database connection (DB2)

1. Log on as the client instance owner.

2. Execute the following at a command prompt:

   db2

3. At the DB2 prompt, enter the following command:

   connect to <*database alias*> user f_sw using <*f_sw password*>

   DB2 will display the database connection information.

Following is an example of the database connection command and the information returned:

   db2 => connect to pedbinst user f_sw using f_sw

     Database Connection Information

   Database server   = DB2/AIX64 8.2.0
   SQL authorization ID = F_SW
   Local database alias = PEDBINST

In this example, the database alias is pedbinst and the f_sw user password is f_sw.

Mount Process Engine CD

1. Log in as **root**

2. Determine the CDROM drive device by executing the following:

   ioscan -funC disk

3. Using the device name returned, mount CD. The following is an example of the command, where /dev/dsk/c0t1d0 is the device name identified above.

   mount /dev/dsk/c0t1d0 /cdrom

Install the Process Engine software

1. Log on to the server as the **root** user.

2. Insert the Process Engine CD. From the console, navigate to the /cdrom directory and execute **setup.sh**.

3. Indicate whether the database will be Oracle or DB2. Wait for files to finish unpacking

   If Process Engine uses an Oracle database, continue with Step 4.

   If Process Engine uses a DB2 database, proceed to Step 5.

4. When prompted, enter the Oracle sys password. The password is required to run the following SQL scripts: pe_install_scripts.sql, pe_filenet_site.sql, pe_create_stored_procedures.sql, and pe_grant_sp_permissions.sql. For further information about these scripts, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

NOTE If an error message indicates that the scripts did not run, you must resolve the errors before proceeding. See "Process Engine SQL Scripts (Oracle databases only)" on page 369.

5. A sequence of installation screens will be presented. Refer to the tables below for information on the screens you will see and the steps to take.

In this screen...	Perform this action...
Welcome	Click **Next** on the Welcome screen to proceed with the installation
Software License Agreement	Review and accept the license agreement for IBM FileNet P8 software products, and then click **Yes**. You must accept the terms of the agreement to proceed with the installation.
Documentation Configuration	Enter the Documentation Server URL, which is where the IBM FileNet P8 Platform Documentation was installed. Your entry must be in the following format:
	http://*<docserver:port#>/<ecm_help>*
	where:
	docserver is the name of the Java web server. *port#* is the port number. *ecm_help* is the root folder of the documentation website. You can use multi-part root folders (e.g.,/docs/ecm_help) if your application server supports them.
Rules Engine Support	Indicate whether you want to configure the Rules Engine interface to run on this Process Engine.
	Click **Yes** if the JRules software is already installed on this computer or if you know where on this computer JRules will be installed later.
	Click **No** if the JRules software is not and will not be installed on this computer, or if you do not know exactly where on this computer JRules will be installed later.
	If you later install JRules software on this Process Engine, follow the procedures in "Enable Rules Engine integration manually" on page 281 to enable Rules Engine integration manually.
Choose Destination Location **NOTE** This window is displayed only if you click Yes in the Select Components window to install iLog JRules.	Enter the full path to the iLog JRules software installation directory. The directory you specify must already exist. Later during installation (in "Enable Rules Engine integration" on page 279), you will finish setting up Rules Engine integration.
Common Files	Choose the destination directory for configuration files that will be shared with other IBM FileNet P8 components.

In this screen...	Perform this action...
Domain Name	Enter *<domain name>*:*<organization>*, where:
	The maximum length of your *<domain name>* entry does not exceed 20 characters.
	The maximum length of your *<organization>* entry does not exceed 20 characters.
	Both your *<domain name>* and *<organization>* entries contain only alphanumeric characters and underscores.
	A typical convention is to enter *<your PE machine name>*:FileNet. If the machine name includes hyphens, replace them with underscores in your entry.
Primary Server Selection	Leave the box checked indicating that this is the primary Process Engine.
Local or Remote RDBMS	Indicate whether the database will be local or remote.
	Depending upon your selection here you will be presented with a number of additional screens appropriate to database location and database software. Proceed as appropriate to:
	• "Remote DB2 database" on page 199
	• "Remote Oracle database" on page 199
	• "Local Oracle database" on page 200
	NOTE Only remote DB2 databases are supported.
Database Selection Confirmation	This screen is presented as a confirmation of the type of database you chose to configure. As directed in this screen, if you choose to change the database type, choose **Cancel** in this screen and re-run setup. Otherwise click **Next** to proceed.

Remote DB2 database

In this screen...	Perform this action...
Database Alias Name	Enter the database alias name as assigned in "Install DB2 Client for Content Engine and Process Engine" on page 77.
Local DB2 instance owner name	Enter the DB2 client instance owner's name. Case sensitive.
FileNet Data Tablespace name	defaults to VWDATA_TS
DB2 Passwords	Enter the passwords for the Operating System **f_sw** and **f_maint** users.
	Enter the passwords set for these users in either "Install DB2 server for Content Engine and Process Engine" on page 68 if database authentication is SERVER or SERVER_ENCRYPT, or "Install DB2 Client for Content Engine and Process Engine" on page 77 if authentication is CLIENT.

Remote Oracle database

In this screen...	Perform this action...
Oracle Environment Variables	Enter the appropriate values for the Global Database name, Oracle Home, User Name, Oracle SID, Oracle DBA group name
	The Oracle Home path you enter refers to the local Oracle Client installation directory.
Oracle Database Information	Enter the Oracle tablespace to be used by Process Engine for temporary data. Default value is VWTEMP_TS.
	Enter the Oracle tablespace to be used for Process Engine data. Default value is VWDATA_TS
	Enter the optional tablespace to be used by Process Engine for indexes. The data tablespace will be used if no index tablespace is designated. Default value is VWINDEX_TS.
	All entries must match the value you used when the temporary tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63.

Local Oracle database

In this screen...	Perform this action...
Oracle Environment Variables	Enter the appropriate values for the Oracle Home, User Name, Oracle SID, Oracle DBA group name
	The Oracle Home path you enter refers to the local Oracle Client installation directory.
Oracle Database Information	Enter the Oracle tablespace to be used by Process Engine for temporary data. Default value is VWTEMP_TS.
	Enter the Oracle tablespace to be used for Process Engine data. Default value is VWDATA_TS
	Enter the optional tablespace to be used by Process Engine for indexes. The data tablespace will be used if no index tablespace is designated. Default value is VWINDEX_TS.
	All entries must match the value you used when the temporary tablespace was created in "Install Oracle Server for IBM FileNet P8" on page 63.

6. Enter the device file names for the fn_SEC_DB0 and fn_SEC_RL0 volumes.

7. Review the information on the installation process. Note that you can check the progress of the installation in the /fnsw/tmp-installer/MINI-INSTALLER.LOG file. Click **Next** when you are ready to proceed.

8. Review the summary information on the installation location for Process Engine. Click **Next** when you are ready to proceed.

9. Setup will run for several minutes. Progress is displayed and at some points may not advance for an extended period of time. To check the progress of the installation, monitor the /fnsw/tmp-installer/MINI-INSTALLER.LOG file for current activity.

    If the installation failed, check the /fnsw/tmp_installer/MINI_INSTALLER_ERROR.LOG file for errors.

10. (Oracle database only) When prompted, enter the Oracle sys password. The password is required to run the SQL script pe_setup_users_defaults.sql. For further information about this script, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

    NOTE If an error message indicates that the script did not run, or you are not prompted for the sys password, you must resolve any errors and run the script manually. See "Process Engine SQL Scripts (Oracle databases only)" on page 369.

11. Check all log files and verify that there were no errors or failures. Correct any errors before proceeding. Log files to check include:

    - All **.lst** and **.log** files in the **/fnsw/local/logs/PE** directory

    - All **.log** files in the **/fnsw/local/logs** directory and **all its subdirectories**

12. Log off as the root user and log in as **fnsw**.

Reset administrative user passwords

During Process Engine software installation, several local users required internally by Process Engine are automatically created. To maintain security, IBM strongly recommends resetting the passwords for these users. The following table lists the users created, the level of system access each user has, and the tool used to change the password. See the IBM FileNet Image Services documentation for instructions on using the referenced tools.

User Name	User Type	Description	How to modify
f_maint	Database (Oracle)	Has DBA privileges. Used for RDBMS maintenance.	Execute set_f_maint_pw. See steps below.
SysAdmin	SEC (internal Process Engine security software)	Primary administrator user for FileNet software tools.	Execute Xapex -> Security Administration. Log on as SysAdmin.
FieldService	SEC	Used internally by Process Engine software.	
Operator	SEC	Used internally by Process Engine software.	

Set the f_maint password (Oracle only)

1. Log on as the **fnsw** user.

2. At a command prompt, enter:

    set_f_maint_pw

3. Press **Return** at the prompt for the current password.

4. Enter a new password for f_maint when prompted. The password must be between 6 and 30 characters.

5. Confirm the new password when prompted.

Delete unnecessary users

Process Engine Setup automatically creates several users (listed below) in the database. The Process Engine software does not require these users, so you can safely delete them.

*   f_sqi

*   f_operator

*   f_cso

*   f_open

(Optional. Oracle databases only) Delete fnsw user from the Oracle database administrators group

Remove the **fnsw** user from the <Oracle Database Administrators> group.

Restore any custom modifications to the .profile or .cshrc.

Process Engine Setup creates a new .profile or .cshrc file. If the previous versions of these files contained any custom settings, edit the new .profile or .cshrc file for the fnsw, root and oracle users accordingly.

Saved files in are .profile.old.nn or .cshrc.old.nn, where nn is a sequential number. The latest saved version will be in the highest numbered file.

Verify the /etc/services file settings

1. Log in as the **root** user and check the **/etc/services** file to verify the following parameters:

   ```
   snmp        161/udp  snmpd      # Simple Network Management Protocol Agent
   snmp-trap   162/udp  trapd      # Simple Network Management Protocol Traps
   tms         32768/tcp
   cor         32769/tcp
   nch         32770/udp
   fn_trapd    35225/udp
   ```

2. If necessary, add the parameters to the file and save the changes.

Clean up before starting Process Engine

1. Log in as **fnsw.**

2. Execute:

   vwzap

3. Execute:

   killfnsw -DAyS

4. Execute:

   ipcs -a

   Verify there is no entry with 0x464 pattern. If there are any entries with this pattern, use ipcim to remove them.

Edit the /etc/inittab file

By default, the Process Engine software starts automatically on restart and needs to have the database already started when Process Engine comes up. If the database is not automatically started on restart, edit the /etc/inittab file on Process Engine to comment out the autostart of Process Engine

   rcfnsw:2:once:/etc/rc.initfnsw 2>&1 | alog -tboot > /dev/console 2>&1
   to
   #rcfnsw:2:once:/etc/rc.initfnsw 2>&1 | alog -tboot > /dev/console 2>&1

Verify that the database and Process Engine software are running

Be sure that both the database and Process Engine software are running before proceeding to the next task. By default, the IMS Control Services Manager and Process Engine Services Manager are automatically started on system restart. However, the Process Engine software itself must be manually started. To start the software, take the following steps:

1. Log on as fnsw.

2. Start Process Task Manager by entering the following at the command prompt:

   vwtaskman

3. From the Action menu, choose **Start**.

Task 12: Start the Pooled Process Manager (PPM)

The Pooled Process Manager (PPM) is the link between the Process Router on an Application Engine or Content Engine and the VWJs processes on Process Engine. Workflow activity cannot occur unless the PPM is running.

To start the PPM

1. On Process Engine, log on as a member of the **fnadmin** group and start the Process Task Manager.

   • Windows: Select **Start > Programs > FileNet P8 Platform > Process Engine > Process Task Manager.**

   • UNIX: Enter **vwtaskman** from the command prompt.

2. Select **PPM** in the left pane (also referred to as the feature pane).

3. Enter the appropriate property values on the General and Advanced tabs. For descriptions of the properties, see FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Process Engine > PPM (Pooled Process Manager).

   NOTE If Process Engine and Application Engine are on opposite sides of a firewall, you must specify the Return Port property.

4. Click **Apply** to save your changes.

5. Click **Start** on the toolbar.

Task 13: Configure the Process Engine LDAP Connection

Complete this task to configure the connection between Process Engine and the IBM FileNet P8 directory service.

NOTES

- If using Active Directory, get a complete export of the domain by executing:

      ldifde –f *<filename>*

   This will provide the correct syntax for user and group base and serviceuserName.

- If you wish to do only a partial export of the domain, you can use one of the following, and cut and paste the results into the LDAP configuration:

      dsquery user -name *<UserDisplayName>*

      dsquery group -name *<GroupDisplayName>*

- Ensure that you are using the correct directory server port.

To configure the LDAP connection

1. Log onto Process Engine as a member of **fnadmin**.

    On a Windows machine, Process Engine Setup automatically creates the fnadmin group and the fnsw user, and adds the fnsw user to the fnadmin group.

    On a UNIX machine, this user and group were manually created before running Process Engine setup.

2. Start the Process Task Manager.

    - Windows: Select **Start > Programs > FileNet P8 Platform > Process Engine > Process Task Manager.**

    - UNIX: Enter **vwtaskman** from the command prompt. The terminal should support X Windows and the DISPLAY environment variable should be set.

3. Select **Process Service** in the feature pane.

4. If the Process Service is not already running, start it by choosing **Start** from the **Action** menu.

5. Select the **LDAP** tab.

6. On both the **General** and **Advanced** tabs, enter the appropriate value for each property. Most properties do not have a default value because they are system-specific; not entering values or entering incorrect values will disrupt runtime activity. For property descriptions, see FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Process Engine > Process Service > Configure the Process Service > Configure the Process Service LDAP connection (Workplace) > LDAP general properties.

    NOTE The **General** tab includes properties (*Communication Mode* and *Certificate Database*) related to SSL security. In conjunction with setting these properties, you must complete the procedures in "Set up Process Engine SSL security" on page 251 to enable SSL security on Process Engine. The User and Group Base value must match what was specified as the DefaultRealm during installation and configuration of Content Engine.

7. After all parameters have been entered, click **Apply** and restart the Process Service when prompted.

Task 14: Install Application Engine

This task includes Application Engine installation instructions for all supported application servers, for UNIX and Windows platforms. The installer will create the Application Engine folder structure and files needed for Application Engine. After installing the files, you must configure and start the Application Engine application. See "Configure and start Application Engine." on page 212.

Before you install Application Engine

Read "Installation Planning Considerations" on page 20, "Operating System Considerations" on page 21, and "Security Authentication Considerations" on page 25, and make sure your installation location meets the requirements specific for Application Engine outlined in the *IBM FileNet P8 Hardware and Software Requirements*.

CAUTION (Linux only) To install Application Engine several legacy libraries are required. Add the compat-libstdc++-7.3-2.96.122.i386.RPM located on Disc 3 of the RedHat AS 3.0 install media to your installation.

NOTES

- To ensure proper functionality, performance, and ongoing maintenance, the Application Engine should only be installed once per application server (or virtual machine or WebSphere LPAR). You may, however, deploy multiple instances of a single Application Engine version per application server.

- Before logging on to Workplace for the first time, make sure at least one object store has been created on the Content Engine. See "Create an object store and verify the Content Engine installation" on page 147 for more information.

- If you plan to set up a web farm or clustered environment, in addition to these instructions, read and follow the instructions in the *IBM FileNet P8 Platform High Availability Technical Notice*.

- If you run the installer to upgrade Application Engine a confirmation screen will appear to verify that there is a version of Application Engine installed that can be upgraded. See "Upgrade Application Engine" on page 328 for more information. Also, be aware that the following installer screens will not appear on an upgrade:

  - Choose an application server

  - Content Engine Java API Configuration

  - Application Engine User Security

  - User Token Security

  - Documentation Configuration

  - Folder Location of bootstrap.properties

To install the Application Engine software

1. Log on to the application server:

   UNIX - logon as a user with *write* access to the **/bin** directory and *read*, *write*, and *execute* access to the directory where you plan to install Application Engine.

   Windows - log on as a member of the local Administrators group or a user with equivalent permissions.

2. Stop the application server if it is running.

> **NOTE** (WebSphere only) Stopping the application server is not necessary for WebSphere installations.

3. Start the Application Engine Setup wizard:

   AIX - Insert and mount the Application Engine CD. Navigate to */<mount_point>/* and execute **AIXfilenet_app_engine_setup.bin**.

   HP-UX - Insert and mount the Application Engine CD. Navigate to */<mount_point>/* and execute **HPUX11filenet_app_engine_setup.bin**.

   Linux - Insert and mount the Application Engine CD. Navigate to */<mount_point>/* and execute **LINUXfilenet_app_engine_setup.bin**.

   Solaris - Insert and mount the Application Engine CD. Navigate to **/cdrom/p8ae35sol/** and execute **SOLARISfilenet_app_engine_setup.bin**.

   Windows - Insert the Application Engine CD. Navigate to **CD-ROM (D:)** and execute **WINfilenet_app_engine_setup.exe**.

4. Complete the Setup screens as follows:

In this screen...	Perform this action...
License Agreement	Review and accept the license agreement for IBM FileNet P8 software products, and then click **Next**.

Directory Name	For the Directory Name field, enter or browse to the location where you want to install the Application Engine software (*<AE_install_path>*), or accept the default location:
	
	     UNIX - **/opt**
	
	     Windows - **C:\Program Files**
	
	 Click **Next**.
	
	 The installation program creates a **FileNet** directory at the selected location, and installs the Application Engine software in this directory:
	
	     UNIX - *<AE_install_path>*/**FileNet/Workplace**
	
	     Windows - *<AE_install_path>***\FileNet\Workplace**

Choose the Setup Type	Select the setup type, and click **Next**.
	
	 • Select Typical to install these components:
	   – Workplace web applications
	   – Process and Content Java APIs
	
	 • Select Custom to select the individual components to install:
	   – Workplace web applications
	   – Process and Content Java APIs
	   – Workplace Toolkit Source Code (for custom application development)

In this screen...	Perform this action...
Verify Upgrade **NOTE** This screen *only* appears when you use the installer to perform an upgrade.	The setup wizard detects supported older versions of Application Engine. If the wizard detects a version that can be upgraded, click **Next** to proceed with the upgrade. If you don't want to upgrade your Application Engine at this time, click **Cancel** to exit the wizard.
Choose an application server **NOTE** This screen will *not* appear when you use the installer to perform an upgrade.	For WebSphere, choose **WebSphere Application Server**. For WebLogic, choose **WebLogic Application Server**. For JBoss/Tomcat, Oracle Application Server, Sun Java Application Server, and all other application servers, choose **Generic J2EE Application Server**. Check the box if your application server uses JDK 1.3.x. Click **Next**.

In this screen...	Perform this action...
Content Engine Java API Configuration **NOTE** This screen will *not* appear when you use the installer to perform an upgrade.	Configure the Content Engine Java API, as follows: a. Content Engine client software URL: Replace the sample server name and port number (*CEserver.example.com:8008*) with the Content Engine server name and Content Engine Apache (SOAP) port number for your Content Engine server on which the Application Engine Web Connectivity (Java) module resides. For information, see "IBM FileNet P8 Port Numbers" on page 364) **NOTE** To change the Content Engine name later, or to connect to a different Content Engine, edit the **WcmApiConfig.properties** file. For information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to FileNet P8 Administration > Application Engine Administration > Key configuration files and logs. b. Content Engine upload URL Replace the sample server name and port number (*CEserver.example.com:8008*) with the Content Engine server name and Content Engine Apache (SOAP) port number to use when uploading document content to the Content Engine server. c. Content Engine download URL Replace the sample server name and port number (*CEserver.example.com:8008*) with the Content Engine server name and Content Engine Apache (SOAP) port number for your Content Engine server from which to download document content. Click **Next**.

In this screen...	Perform this action...
Application Engine User Security **NOTE** This screen will *not* appear when you use the installer to perform an upgrade.	Configure Application Engine user security, as follows: a. Select credentials protection, the encryption method to protect user logon credentials passed between Application Engine and Content Engine: • Clear encoding - encodes credentials using base 64 encoding. • Symmetric encryption - uses cryptography keys to encrypt and decrypt user credentials. If you select symmetric encryption, the setup program generates a cryptography key file, **CryptoKeyFile.properties**, and places it in the default path or the path you specify. b. (Optional) Check the box to create maximum strength keys. By default the installer creates limited strength (128-bit) keys; if you check the box, the installer creates 448-bit keys. **CAUTION** If you are using JDK 1.4 or higher and choose to use maximum strength keys you must install the Unlimited Strength Jurisdiction Policy Files before logging in. For information, see "Install unlimited strength .jar files." on page 245. c. (If you selected Symmetric encryption) Make a note of the crypto key file path. You will need the location when you set up symmetric encryption, see "Configure symmetric encryption" on page 245. By default, the installation program installs the **CryptoKeyFile.properties** file to: UNIX - ***<AE_install_path>*/FileNet/Authentication/** Windows - ***<AE_install_path>*\FileNet\Authentication** Click **Next**. **NOTE** The credentials protection method and path to the **CryptoKeyFile.properties** file are also recorded in the **WcmApiConfig.properties** file. For information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to FileNet P8 administration > Application Engine Administration > Key configuration files and logs.

In this screen...	Perform this action...
User Token Security **NOTE** This screen will *not* appear when you use the installer to perform an upgrade.	Configure user token security. a. Check the box to create maximum strength keys. By default, the installer creates limited strength (128-bit) keys; if you check the box, the installer creates 448-bit keys. **CAUTION** If you are using JDK 1.4 or higher and choose to use maximum strength keys you must install the Unlimited Strength Jurisdiction Policy Files before logging in. For information, see "Install unlimited strength .jar files." on page 245. b. Make a note of the user token crypto key path. The **UTCryptoKeyFile.properties** file contains the user token cryptography key used by IBM FileNet P8 applications to launch into each other without the need for additional login. The default User Token Crypto key file path is: UNIX - ***<AE_install_path>*/FileNet/Authentication/** Windows - ***<AE_install_path>*\FileNet\Authentication** Click **Next**. **CAUTION** For multiple applications to pass user tokens between one another, each participating application *must* use the same encryption key file. Copy the **UTCryptoKeyFile.properties** file installed with Application Engine to all servers that are hosting a token-sharing application. For information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Developer Help > Workplace Integration and Customization Introduction > User Tokens > Configuring Applications to Use Tokens.

In this screen...	Perform this action...
Documentation Configuration **NOTE** This screen will *not* appear when you use the installer to perform an upgrade.	For the documentation URL, enter the Documentation Server URL, which is where the IBM FileNet P8 Platform Documentation is installed, then click **Next**. Your entry must be in the following format: `http://<docserver:port#>/<ecm_help>/` where: *docserver* is the name of the Java web server. *port#* is the port number. *ecm_help* is the root folder of the documentation website. You can use multi-part root folders (e.g., /docs/ecm_help) if your application server supports them. See "Install FileNet P8 Platform documentation" on page 57 for more information. **NOTE** For information on how to reconfigure the Documentation URL, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to FileNet P8 Administration > Application Engine Administration > Key configuration files and logs > Bootstrap properties.

Folder Location of bootstrap.properties
 	
NOTE This screen will *not* appear when you use the installer to perform an upgrade.
	Set the bootstrap.properties file location, then click **Next**.
	
	NOTE Leave the location blank unless you are setting up a web farm/ clustered environment where multiple Application Engines will access the same bootstrap.properties file. For more information, see the *IBM FileNet P8 Platform High Availability Technical Notice*.
	
	The **bootstrap.properties** file stores bootstrap preferences, a category of site preferences that affect connectivity and security. For specific information on bootstrap preferences see "Set bootstrap preferences" on page 238.
	
	The file will be installed to:
	
	    UNIX - ***<AE_install_path>*/FileNet/Workplace/WEB-INF/**
	
	    Windows - ***<AE_install_path>*\FileNet\Workplace\WEB-INF**
	
	CAUTION Using a UNC admin share (ex: **\\server\C$**) for a shared bootstrap location is not supported. You may use an ordinary file share.

In this screen...	Perform this action...
Upload Directory	Select the Upload Directory, then click **Next**.
	The Upload Directory is the directory used by Workplace to store temporary copies of files uploaded to Workplace.
	Leave the default option or browse for a directory to hold the temporary upload files.
	CAUTION Using a UNC admin share (ex: **\\server\C$**) for a shared upload directory location is not supported. You may use an ordinary file share.
Download Directory	Select the Download Directory, then click **Next**.
	The Download Directory is the directory used by Workplace to store temporary copies of files downloaded from Workplace.
	Leave the default option or browse for a directory to hold the temporary download files.
	CAUTION Using a UNC admin share (ex: **\\server\C$**) for a shared download directory is not supported. You may use an ordinary file share.
Ready to Install	Verify your selections, and click **Next** to install Application Engine.
Completing the Application Engine Setup wizard	Click **Finish** to complete the Application Engine installation.

5. (UNIX only) Log out and back in again to set the environment variables.

6. View the **app_engine_install_log_35.txt** file, located in:

    UNIX - *<AE_install_path>*/**FileNet/**

    Windows - *<AE_install_path>***FileNet**

    Verify that no errors or failures were logged. Correct any errors before proceeding.

    NOTE See the *IBM FileNet P8 Platform Troubleshooting Guide* for more details about installation actions and errors.

7. Configure and start Application Engine.

    Follow the instructions for your specific application server to configure and start your Application Engine:

    - Task 15a on page 213 (WebSphere)
    - Task 15b on page 220 (WebLogic)
    - Task 15c on page 223 (JBoss/Tomcat)
    - Task 15d on page 228 (Oracle Application Server)
    - Task 15e on page 231 (Sun Java Application Server)
    - Task 15f on page 234 (generic application server)

Task 15a: Configure and start Application Engine (WebSphere)

This topic covers the configuration, deployment, and start of your Application Engine application (Workplace) on WebSphere.

NOTE Application Engine uses cookie names for passing session information between Application Engine and the client browser. This session information affects how Application Engine interacts with several applets, such as Process Designer, Search Designer, and Process Simulator. To avoid forcing end users to log in individually to each applet, do not configure the application server to use application-unique cookie names for the deployed Application Engine. For best results, use JSESSIONID for the cookie name.

To configure and start Application Engine (WebSphere 5.1)

1. Open the WebSphere Administrative Console.

2. Set Java^{TM} Virtual Machine (JVM) memory settings.

   a. Expand **Servers**. Click **Application Servers**. Click *<server name>*. Under "Server Infrastructure", select **Java & Process Management**. Select **Process Definition** and then select **Java Virtual Machine**. Enter the numbers for the Initial and Maximum Heap Size.

      NOTE Please refer to your application server vendor's recommendation for Initial and Maximum heap size values.

   b. Click **Apply**.

3. Install the Enterprise Application (Workplace).

   a. Verify that the app_engine.war file was created before you continue.

   b. From the Administrative Console, expand **Applications**. Click **Install New Application**. The "Preparing for the application installation" dialog opens.

   c. (If the Administrative Console is running *locally*) Select **Local Path** and enter or browse to the location of the **app_engine.war** file created by the setup program (see below for the default path). Do not enter the machine name.

   d. (If the Administrative Console is *remote*) Select **Server path** and enter the fully-qualified path name to the **app_engine.war** file. Do not enter the machine name.

      The default path is:

      > UNIX - *<AE_install_path>***/FileNet/Workplace/**

      > Windows - *<AE_install_path>***\FileNet\Workplace**

   e. Enter the context root:

      Enter **Workplace** and click **Next** to proceed to deploying a new application.

      NOTE The context root is the name of the application you log in to using the web interface, e.g.
      `http://<ApplicationEngineServerName>:<port#>/<Context Root>.`

   f. On the "Preparing for the application installation" screen, leave the defaults, and click **Next**.

   g. On the "Application Security Warning" screen, click **Continue**.

   h. At "Install New Application", Step 1, specify the application name.

      Enter **Workplace**, or the name you chose to call the application, click **Next**.

    i.   At "Install New Application", Step 2, specify the **Virtual Host** for the virtual host that you are planning to use. Check **Workplace** and keep the default virtual host (default_host), click **Next**.

    j.   At "Install New Application", Step 3, configure your application server, then click **Next**.

    k.   At "Install New Application", Step 4, verify your configuration and click **Finish**. Once the configuration is saved, click **Save to Master Configuration**.

    l.   Configure the Classloader settings.

        i.   From the Administrative Console, expand **Applications**. Click **Enterprise Applications**, and click your application (default Workplace).

        ii.   From the **Configuration** tab, set Classloader Mode to **PARENT_LAST**.

        iii.   Verify that the **WAR Classloader Policy** is set to **Module**.

        NOTE You do this only for the specific web application. There are similar settings for the entire application server. Do not change these.

    m. Configure the Web Module Classloader setting.

        i.   From the Administrative Console, expand **Applications**. Click **Enterprise Applications**, and click your application (default Workplace). Under Related Items, click **Web Modules**. Click **app_engine.war**.

        ii.   From the **Configuration** tab, set Classloader Mode to **PARENT_LAST**.

        NOTE You do this only for the specific web application. There are similar settings for the entire application server. Do not change these.

    n.   Click **Apply**, **Save**, then **Save changes to the Master Configuration**.

    o.   Regenerate the web server plug-in.

        From the Administrative Console, expand **Environment**. Click **Update Webserver Plugin**, then click **OK**.

4.   Stop and restart the application server, (and restart the HTTP server, if installed).

5.   Start the Enterprise Application:

    From the Administrative Console, expand **Applications**. Click **Enterprise Application**. Check the box to the left of the **Workplace** application (or whatever you named it), and click **Start**.

6.   Enable Application Integration Installation.

    a.   From the Administrative Console, expand **Environment**. Click **Virtual Hosts**.

    b.   Click the **default_host** (or the host your application is deployed under).

    c.   Click **MIME Types**, then click **New**.

    d.   In the **MIME Type** field, enter **application/octet-stream**

    e.   In the **Extension(s)** field, enter **exe**. Click **OK**.

    f.   Click **Apply**, **Save**, then **Save changes to the Master Configuration**.

    g.   Restart the Workplace application.

7.   Set permissions for the user running the application server.

If the local user that will be running the application server is different from the user that installed AE, you must give the user read/write permissions on the following (default) folders:

UNIX:

> ***<WAS_HOME>*/profiles/default/installedApps/*<node_name>*/app_engine_war.ear/
> app_engine.war**

> ***<AE_install_path>*/FileNet/**

Windows (only required for NTFS formatted partitions):

> ***<WAS_HOME>*\profiles\default\installedApps*<node_name>*\app_engine_war.ear\app_engi
> ne.war**

> ***<AE_install_path>*\FileNet**

8. (UNIX only) Verify that the P8TASKMAN_HOME system environment variable is set.

    The P8TASKMAN_HOME system environment variable should be set to:

    ```
    P8TASKMAN_HOME=<AE_install_path>/CommonFiles
    ```

To configure and start Application Engine (WebSphere 6.0)

1. Open the WebSphere Administrative Console.

2. Set JVM memory settings.

    a. Expand **Servers**. Click **Application Servers**. Click ***<server name>***. Under "Server Infrastructure", select **Java & Process Management**. Select **Process Definition** and then select **Java Virtual Machine**. Enter the numbers for the Initial and Maximum Heap Size.

        NOTE Please refer to your application server vendor's recommendation for Initial and Maximum heap size values.

    b. Click **Apply**.

3. Install the Enterprise Application (Workplace).

    a. Verify that the app_engine.war file was created before you continue.

    b. From the WebSphere Administrative Console, expand **Applications**. Click **Install New Application**. The "Preparing for the application installation" dialog opens.

    c. (If the Administrative Console is running *locally*) Select **Local Path** and enter or browse to the location of the **app_engine.war** file created by the setup program (see below for the default path). Do not enter the machine name.

    d. (If the Administrative Console is *remote*) Select **Remote File System** and enter the fully-qualified path to the **app_engine.war** file. Do not enter the machine name.

        The default path is:

        > UNIX - ***<AE_install_path>*/FileNet/Workplace/**

        > Windows - ***<AE_install_path>*\FileNet\Workplace**

    e. Enter the context root:

        Enter **Workplace** and click **Next** to proceed to deploying a new application.

> **NOTE** The context root is the name of the application you log in to using the web interface, e.g.
> `http://<ApplicationEngineServerName>:<port#>/<Context Root>`.

f. On the "Preparing for the application installation" screen, leave the defaults, and click **Next**.

g. On the "Application Security Warning" screen, click **Continue**.

h. At "Install New Application", Step 1, specify the application name.

Enter **Workplace**, or the name you chose to call the application, click **Next**.

i. At "Install New Application", Step 2, Map modules to servers, specify the **WebServer** you are planning to use. Check **Workplace** and click **Next**.

j. At "Install New Application", Step 3, Map virtual hosts for Web Modules, check **Workplace** and keep the default virtual host (default_host), click **Next**.

k. At "Install New Application", Step 4, verify your configuration and click **Finish**. Once the configuration is saved, click **Save to Master Configuration**.

l. Configure the Classloader settings.

   i. From the Administrative Console, expand **Applications**. Click **Enterprise Applications**, and click your application (default Workplace).

   ii. From the **Configuration** tab, set Classloader Mode to **PARENT_LAST**.

   iii. Verify that the **WAR Classloader Policy** is set to **Module**.

   > **NOTE** You do this only for the specific web application. There are similar settings for the entire application server. Do not change these.

   iv. Click **Apply**.

m. Configure the Web Module Classloader setting.

   i. From the Administrative Console, expand **Applications**. Click **Enterprise Applications**, and click your application (default Workplace). Under Related Items, click **Web Modules**. Click **app_engine.war**.

   ii. From the **Configuration** tab, set Classloader Mode to **PARENT_LAST**.

   > **NOTE** You do this only for the specific web application. There are similar settings for the entire application server. Do not change these.

n. Click **Apply**, **Save**, then **Save changes to the Master Configuration**.

4. Stop and restart the application server, (and restart the HTTP server, if installed).

5. Start the Enterprise Application:

From the Administrative Console, expand **Applications**. Click **Enterprise Application**. Check the box to the left of the **Workplace** application (or whatever you named it), and click **Start**.

6. Enable Application Integration Installation.

a. From the Administrative Console, expand **Environment**. Click **Virtual Hosts**.

b. Click the **default_host** (or the host your application is deployed under).

c. Click **MIME Types**, then click **New**.

d. In the **MIME Type** field, enter **application/octet-stream**

  e. In the **Extension(s)** field, enter **exe**. Click **OK**.

  f. Click **Apply**, **Save**, then **Save changes to the Master Configuration**.

  g. Restart the Workplace application.

7. Set permissions for the user running the application server.

8. (UNIX only) Verify that the P8TASKMAN_HOME system environment variable is set.

To configure and start Application Engine (WebSphere 6.1)

1. Open the WebSphere Administrative Console.

2. Set JVM memory settings.

  a. Expand **Servers**. Click **Application Servers**. Click **<server name>**. Under "Server Infrastructure", select **Java & Process Management**. Select **Process Definition** > **Additional Properties** > **Java Virtual Machine**. Enter the values for the Initial and Maximum Heap Size.

      NOTE Please refer to your application server vendor's recommendation for Initial and Maximum heap size values. For IBM FileNet specific recommendations, see the *IBM FileNet P8 Platform Performance Tuning Guide*. To download this guide from the IBM support page, see "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

  b. Click **Apply**.

3. Install the Enterprise Application (Workplace).

  a. Verify that the app_engine.war file was created before you continue.

  b. From the WebSphere Administrative Console, expand **Applications**. Click **Install New Application**. The "Preparing for the application installation" dialog box opens.

  c. (If the Administrative Console is running *locally*) Select **Local Path** and enter or browse to the location of the **app_engine.war** file created by the setup program (see below for the default path). Do not enter the machine name.

  d. (If the Administrative Console is *remote*) Select **Remote File System** and enter the fully-qualified path to the **app_engine.war** file. Do not enter the machine name.

      The default path is:

      UNIX - **<AE_install_path>/FileNet/Workplace/**

      Windows - **<AE_install_path>\FileNet\Workplace**

  e. Enter the context root:

      Enter **Workplace** and click **Next** to proceed to deploying a new application.

      NOTE The context root is the name of the application you log in to using the web interface, e.g. `http://<ApplicationEngineServerName>:<port#>/<Context Root>`.

  f. In the "Preparing for the application installation" screen, leave the defaults, and click **Next**.

  g. If you see the "Application Security Warning" screen, click **Continue**.

  h. At "Install New Application", Step 1, specify the application name.

      Enter **Workplace**, or the name you chose to call the application, click **Next**.

i. At "Install New Application", Step 2, Map modules to servers, specify the **WebServer** you are planning to use. Check **Workplace** and click **Apply**. Verify that the web server you specify is displayed to the right of Workplace. Click **Next**.

j. At "Install New Application", Step 3, Map virtual hosts for Web Modules, check **Workplace** and keep the default virtual host (default_host), click **Next**.

k. At "Install New Application", Step 4, verify your configuration and click **Finish**. Once the configuration is saved, click **Save to Master Configuration**.

l. Configure the Classloader settings.

   i. From the Administrative Console, expand **Applications**. Click **Enterprise Applications**, and click your application (default Workplace).

   ii. From the **Configuration** tab, click **Class loading and update detection**.

   iii. Change Classloader order from "Classes loaded with parent class loader first" to "Classes loaded with application class loader first."

   NOTE Do this only for the specific web application. Do not change the similar settings for the entire application server.

   iv. Change the polling interval to a number appropriate for your environment.

   v. Click **Apply**.

m. Configure the Web Module Classloader setting.

   i. From the Administrative Console, expand **Applications**. Click **Enterprise Applications**, and click your application (default Workplace). Under Modules, click **Manage Modules**. Click your application (Workplace).

   ii. Set the "Class loader order" to "Classes loaded with application class loader first".

   NOTE Do this only for the specific web application. Do not change the similar settings for the entire application server.

n. Click **Apply**, click **Save**, and then click **Save changes to the Master Configuration**.

4. Stop and restart the application server, (and restart the HTTP server, if installed).

5. Start the Enterprise Application:

   From the Administrative Console, expand **Applications**. Click **Enterprise Application**. Check the box to the left of the **Workplace** application (or whatever you named it), and click **Start**.

6. Enable Application Integration Installation.

   a. From the Administrative Console, expand **Environment**. Click **Virtual Hosts**.

   b. Click the **default_host** (or the host your application is deployed under).

   c. Click **MIME Types**, then click **New**.

   d. In the **MIME Type** field, enter **application/octet-stream**

   e. In the **Extension(s)** field, enter **exe**. Click **OK**.

   f. Click **Apply**, click **Save**, then click **Save changes to the Master Configuration**.

   g. Restart the Workplace application.

7. Set permissions for the user running the application server.

   If the local user that will be running the application server is different from the user that installed AE, you must give the user read/write permissions on the following (default) folders:

   UNIX:

   > ***<WAS_HOME>*/profiles/*<server_instance>*/installedApps/*<node_name>*/ app_engine_war.ear/app_engine.war**

   > ***<AE_install_path>*/FileNet/**

   Windows (only required for NTFS formatted partitions):

   > ***<WAS_HOME>*\profiles*<server_instance>*\installedApps*<node_name>*\ app_engine_war.ear\app_engine.war**

   > ***<AE_install_path>*\FileNet**

8. (UNIX only) Verify that the P8TASKMAN_HOME system environment variable is set.

   The P8TASKMAN_HOME system environment variable should be set to:

   ```
   P8TASKMAN_HOME=<AE_install_path>/CommonFiles
   ```

Task 15b: Configure and start Application Engine (WebLogic)

This topic covers the configuration, deployment, and start of your Application Engine application (Workplace) on WebLogic.

NOTE The Application Engine uses cookie names for passing session information between the Application Engine and the client browser. This session information affects how the Application Engine interacts with several applets, such as Process Designer, Search Designer, and Process Simulator. To avoid forcing end users to log in individually to each applet, do not configure the application server to use application-unique cookie names for the deployed Application Engine. For best results, use JSESSIONID for the cookie name.

To configure and start Application Engine

1. (WebLogic 7.x using JDK1.3 only) Modify the java.security file.

    a. Use a text editor to open the **java.security** file used by WebLogic and typically stored in the following location:

        ***<JDK_1.3_HOME>*/jre/lib/security**

    b. Add the following line, specifying a preference order that does not conflict with an existing entry:

        ```
        security.provider.n=com.sun.crypto.provider.SunJCE
        ```

    where n is the preference order value. For example, in the example below, you can specify a preference order value of 3 or higher.

    The following is an example from the JDK 1.3 java.security file:

        ```
        #
        # List of providers and their preference orders (see above):
        #
        security.provider.1=sun.security.provider.Sun
        security.provider.2=com.sun.rsajca.Provider
        ```

    c. Save and close the **java.security** file.

2. (WebLogic 7.x only) Modify the application server startup script.

    Make the following modification to the application server's startup script. If you are using a WebLogic domain, modify **startWebLogic.cmd** for Windows or **startWebLogic.sh** for UNIX. If you are not using a WebLogic domain, modify **startWLS.cmd** for Windows or **startWLS.sh** for UNIX.

    a. Modify the application classpath.

    Find the CLASSPATH variable and add the jar file paths listed below. If the CLASSPATH variable doesn't exist, add it to the startup script. Do not delete or modify any existing jar file paths, and do not insert spaces.

    NOTE Items in **bold** below are only installed if you are using JDK 1.3, see "Check the box if your application server uses JDK 1.3.x." on page 207. Do not include these in the classpath unless you are using JDK 1.3.

    UNIX (separate each entry with a colon):

        ```
        <AE_install_path>/FileNet/lib2/activation.jar:
        <AE_install_path>/FileNet/lib2/connector.jar:
        <AE_install_path>/FileNet/lib2/jce1_2_2.jar:
        <AE_install_path>/FileNet/lib2/local_policy.jar:
        <AE_install_path>/FileNet/lib2/log4j-1.2.8.jar:
        <AE_install_path>/FileNet/lib2/mailapi.jar:
        <AE_install_path>/FileNet/lib2/soap.jar:
        <AE_install_path>/FileNet/lib2/sunjce_provider.jar:
        ```

```
<AE_install_path>/FileNet/lib2/US_export_policy.jar:
<AE_install_path>/FileNet/lib2/versionAE.jar:
<AE_install_path>/FileNet/lib2/xercesImpl.jar:
<AE_install_path>/FileNet/lib2/xml-apis.jar
```

Windows (separate each entry with a semicolon):

```
<AE_install_path>\FileNet\lib2\activation.jar;
<AE_install_path>\FileNet\lib2\connector.jar;
    <AE_install_path>\FileNet\lib2\jce1_2_2.jar;
    <AE_install_path>\FileNet\lib2\local_policy.jar;
<AE_install_path>\FileNet\lib2\log4j-1.2.8.jar;
<AE_install_path>\FileNet\lib2\mailapi.jar;
<AE_install_path>\FileNet\lib2\soap.jar;
    <AE_install_path>\FileNet\lib2\sunjce_provider.jar;
    <AE_install_path>\FileNet\lib2\US_export_policy.jar;
<AE_install_path>\FileNet\lib2\versionAE.jar;
<AE_install_path>\FileNet\lib2\xercesImpl.jar;
<AE_install_path>\FileNet\lib2\xml-apis.jar;
```

b. Modify the MaxPermSize.

Find the MEM_ARGS variable and append the following to any existing settings:

```
–XX:MaxPermSize=<size>m
```

Where <size> is the value, in MB, of the MaxPermSize. Please refer to your application server vendor's recommendation for a value for your configuration.

NOTE If the MEM_ARGS variable doesn't exist, add it to the startup script.

3. Start the application server.

4. Create a new Web Application:

- WebLogic 7.0.x

    i. From the WebLogic Server Console, under *<mydomain>* expand **Deployments**, and click **Web Applications**.

    ii. Click **Configure a new Web Application**.

    iii. From the right pane of the WebLogic Server Console, browse to the Workplace folder in

       UNIX - *<AE_install_path>*/**FileNet**

       Windows - *<AE_install_path>***FileNet**

       Click **select** to select **Workplace**.

    iv. Select *<myserver>* from **Available Servers** and click the right-arrow button so that *<myserver>* becomes the target server. Verify that the **Application Name** is **Workplace**.

    v. Click **Configure and Deploy**.

       NOTE To verify that the deployment was successful, expand **Deployments** and **Web Application Modules**. The web application Workplace will be listed.

- WebLogic 8.1.x

    i. From the WebLogic Server Console, *<mydomain>*, expand **Deployments**, and click **Web Application Modules**.

    ii. Click **Deploy a new Web Application Module...**

    iii. From the right pane of the WebLogic Server Console, browse to and select the radio button for the Workplace folder in

           UNIX - ***<AE_install_path>*/FileNet**

           Windows - ***<AE_install_path>*\FileNet**

        Click **Target Module** to select **Workplace**.

    iv. Verify that the **Name** field has the value **Workplace**.

    v. Click **Deploy**.

        NOTE To verify that the deployment was successful, expand **Web Applications**. The web application Workplace will be listed.

- WebLogic 9.2.x

    i. From the WebLogic Server Console, ***<mydomain>***, expand **Deployments**, and click **Install**.

    ii. From the right pane of the WebLogic Server Console, browse to and select the radio button for the Workplace folder in

           UNIX - ***<AE_install_path>*/FileNet**

           Windows - ***<AE_install_path>*\FileNet**

        Click **Target Module** to select **Workplace**.

    iii. Verify that the **Name** field has the value **Workplace** and the Location field has the right value. Accept the other default values,and click **Finish**.

        NOTE To verify that the deployment was successful, click **Deployments**. The web application Workplace will be listed.

5. Set permissions for the user running the application server.

If the user that will be running the application server is different from the user that installed AE, you must give the user read/write permissions on the following folder:

UNIX:

    ***<AE_install_path>*/FileNet/**

Windows (only required for NTFS formatted partitions):

    ***<AE_install_path>*\FileNet**

6. (UNIX only) Verify that the P8TASKMAN_HOME system environment variable is set.

The P8TASKMAN_HOME system environment variable should be set to:

```
P8TASKMAN_HOME=<AE_install_path>/CommonFiles
```

Task 15c: Configure and start Application Engine (JBoss/Tomcat)

This topic covers the configuration, deployment, and start of your Application Engine application (Workplace) on JBoss/Tomcat.

NOTE The Application Engine uses cookie names for passing session information between the Application Engine and the client browser. This session information affects how the Application Engine interacts with several applets, such as Process Designer, Search Designer, and Process Simulator. To avoid forcing end users to log in individually to each applet, do not configure the application server to use application-unique cookie names for the deployed Application Engine. For best results, use JSESSIONID for the cookie name.

To configure and start Application Engine

NOTE The following procedure contain pathnames for both UNIX and Windows. If there is no difference in directory structure, a forward slash (/) will be used to separate the elements of a pathname for both UNIX and Windows.

1. (Application servers using JDK1.3 only) Modify the java.security file.

   a. Use a text editor to open the java.security file used by the application server, and typically stored in the following location:

      ***<JDK_1.3_Home>*/jre/lib/security**

   b. Add the following line, specifying a preference order that does not conflict with an existing entry:

      ```
      security.provider.n=com.sun.crypto.provider.SunJCE
      ```

      where n is the preference order value. In the example below, you can specify a preference order value of 3 or higher.

      NOTE If you want to use a JCE provider other than SunJCE, make sure it is compatible with the JDK version in use and supports the Blowfish algorithm in ECM mode. Follow the JCE vendor's instructions for installation.

      The following is an example from the JDK 1.3 java.security file:

      ```
      #
      # List of providers and their preference orders (see above):
      #
      security.provider.1=sun.security.provider.Sun
      security.provider.2=com.sun.rsajca.Provider
      ```

   c. Save and close the java.security file.

2. Configure the application server

   JBoss (version 4.02 and higher only)

   a. On the JBoss server, copy the **/Workplace** folder from:

      ***<AE_install_path>*/FileNet/**

      to:

      ***<JBoss_HOME>*/server/default/deploy/**

   b. Append the extension .war to the Workplace folder:

      ***<JBoss_HOME>*/server/default/deploy/Workplace.war**

JBoss (version 4.01 and lower only)

To deploy Application Engine on JBoss version 4.01 and lower, you must configure isolated classloading for deployed web applications by deploying the web application within an enterprise application (EAR).

a. Under ***<JBoss_HOME>*/server/default/deploy**, create a folder named ***<Web Application Name>*.ear**.

    Example: In the case of Workplace, name the folder Workplace.ear.

b. Within the **/Workplace.ear** folder create a **/META-INF** subdirectory .

c. Within **/META-INF**, create a file named application.xml with the following content:

```
<?xml version="1.0"?>
<application
        xmlns="http://java.sun.com/xml/ns/j2ee"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee
        http://java.sun.com/xml/ns/j2ee/application_1_4.xsd"
        version="1.4">
    <display-name><Web Application Name> EAR</display-name>
    <description><Web Application Name> EAR</description>
    <module>
        <web>
            <web-uri><Web Application Name>.war</web-uri>
            <context-root><Web Application Name></context-root>
        </web>
    </module>
</application>
```

NOTE Replace all occurrences of ***<Web Application Name>*** with the name of the web application.

Example: For this example, use Workplace.

NOTE If your web application name includes extended characters, save the application.xml file as a UTF-8 encoded file.

d. Within **/META-INF**, create a file named jboss-app.xml with the following content:

```
<jboss-app>
    <loader-repository>
        <Web Application Name>:loader=<Web Application Name>.ear
          <loader-repository-config>
             java2ParentDelegaton=true
        </loader-repository-config>
    </loader-repository>
</jboss-app>
```

NOTE Replace all occurrences of ***<Web Application Name>*** with the name of the web application.

Example: For this example, use Workplace.

NOTE If your web application name includes extended characters, save the jboss-app.xml file as a UTF-8 encoded file.

e. Copy the **/Workplace** folder from:

    ***<AE_install_path>*/FileNet/**

    to:

    ***<JBoss_HOME>*/server/default/deploy/*<Web Application Name>*.ear**

f. Append the extension .war to the Workplace folder:

<JBoss_HOME>/server/default/deploy/*<Web Application Name>*.ear/Workplace.war

g. (JBoss 4.01 only) Remove .jar files.

   i. Navigate to *<JBoss_HOME>*/server/default/deploy/*<Web Application Name>*.ear/Workplace.war/WEB-INF/lib/.

      Delete the following JAR files, as they are already included withJBoss:

      • activation.jar

      • jaxrpc.jar

      • listener.jar

      • mail.jar

      • mailapi.jar

      • smtp.jar

      • xercesImpl.jar

   ii. Remove the temp working directory for Workplace:

      <JBoss_HOME>/server/default/work/jboss.web/localhost/Workplace

      NOTE The directory will exist only if you have previously run the Workplace application on this JBoss application server.

Tomcat

a. On the Tomcat server, copy the **/Workplace** folder from:

   <AE_install_path>/FileNet/

   to:

   <Tomcat_HOME>/webapps/

b. (On a freshly installed Tomcat system only) On the Tomcat server, copy the **tools.jar** file from:

   <JDK_HOME>/lib

   to:

   <Tomcat_HOME>/common/lib/

3. Set permissions for the user running the application server.

   If the user that will be running the application server is different from the user that installed AE, you must give the user read/write permissions on the following folders:

JBoss

– UNIX

   <JBoss_HOME>/server/default/deploy/Workplace.war

   <AE_install_path>/FileNet/

– Windows (only required for NTFS formatted partitions):

   <JBoss_HOME>\server\default\deploy\Workplace.war

***<AE_install_path>*\FileNet**

Tomcat

– UNIX:

***<Tomcat_HOME>*/webapps/Workplace**

***<AE_install_path>*/FileNet/**

– Windows (only required for NTFS formatted partitions):

***<Tomcat_HOME>*\webapps\Workplace**

***<AE_install_path>*\FileNet**

4. (UNIX only) Verify that the P8TASKMAN_HOME system environment variable is set.

    The P8TASKMAN_HOME system environment variable should be set to:

    ```
    P8TASKMAN_HOME=<AE_install_path>/CommonFiles
    ```

5. Start the application server.

6. Logon to the application server console to confirm that the application server is running.

7. (Optional) Disable JBoss logging.

    In development mode, JBoss creates a large number of HTTP Access, "INFO", "DEBUG" and "TRACE" log messages. This can cause unexpected behavior in the deployed IBM FileNet software. Using the following procedure, you can limit this type of excessive JBoss logging.

    NOTE When logging is disabled, error messages will still be displayed in the JBoss console.

    a. Edit the **log4j.xml** file (***<JBOSS_HOME>*/server/default/conf/log4j.xml**).

        i.   Change all threshold values and priority values from "INFO", "DEBUG", or "TRACE" to "ERROR".

        ii. Delete or comment out the "Preserve messages in a local file" to turn off the server log.

    b. To turn off HTTP access logging, open **jboss-service.xml** with a text editor and delete or comment out the "Access logger" section.

        Location of jboss-service.xml:

        •   JBoss 3.x - ***<JBoss_Home>*/server/default/deploy/jbossweb-tomcat41.sar/META-INF**

        •   JBoss 4.1 - ***<JBoss_Home>*/server/default/deploy/jbossweb-tomcat50.sar/META-INF**

        •   JBoss 4.2 - ***<JBoss_Home>*/server/default/deploy/jbossweb-tomcat55.sar/META-INF**

    c. (JBoss 3.x only) To turn off JCA debugging, open **transaction-service.xml** with a text editor and change the value of the "Debug" attribute from true to false.

        Location of transaction-service.xml:

        •   JBoss 3.x - ***<JBoss_Home>*/server/default/deploy**

        •   JBoss 4.1 - File is not present in Jboss 4.1

        •   JBoss 4.2 - File is not present in Jboss 4.2

    d. Open **web.xml** and change the logVerbosityLevel to "FATAL".

Location of web.xml:

- JBoss 3.x - ***<JBoss_Home>*/server/default/deploy/jbossweb-tomcat41.sar**

- JBoss 4.1 - ***<JBoss_Home>*/server/default/deploy/jbossweb-tomcat50.sar/conf**

- JBoss 4.2 - ***<JBoss_Home>*/server/default/deploy/jbossweb-tomcat55.sar/conf**

e. Restart the JBoss server.

Task 15d: Configure and start Application Engine (Oracle Application Server)

This topic covers the configuration, deployment, and start of your Application Engine application (Workplace) on Oracle Application Server.

NOTE The Application Engine uses cookie names for passing session information between the Application Engine and the client browser. This session information affects how the Application Engine interacts with several applets, such as Process Designer, Search Designer, and Process Simulator. To avoid forcing end users to log in individually to each applet, do not configure the application server to use application-unique cookie names for the deployed Application Engine. For best results, use JSESSIONID for the cookie name.

To configure and start Application Engine

1. Start the Oracle Application Server.

2. From the Oracle Admin Console, use an existing OC4J Instance or create and name a unique OC4J Instance to use with your Application Engine.

3. Set JVM memory settings.

   a. From the console, click the instance you created.

   b. In the OC4J admin window that opens, click **Administration**.

   c. Under Instance properties, click **Server properties**.

   d. Under Command Line Options, edit the Java Options field.

      Set your JVM memory settings by appending a minimum (-Xms*value*m) and maximum (-Xmx*value*m) value to the entries in the field.

      CAUTION By default the Oracle Xmx entry is set to 256 Mb. This is too small to successfully deploy the Workplace application. Oracle recommends setting the Xmx entry to 512 Mb. For more information, see the *Oracle® Application Server Administrator's Guide*, chapter *J.3.2.5 Problems Deploying Large OC4J Applications*.

   e. Click **Apply** to apply the settings.

   f. When prompted, click **Yes** to restart your OC4J server instance.

   g. Click **OK** to close the confirmation window.

4. After the restart, from the console, verify that your HTTP server has been started. If not, start it.

5. Deploy and configure the Workplace application.

   a. In the console, select the OC4J Instance where you want to deploy the war file.

   b. Select the **Applications** tab.

   c. Click **Deploy War File**.

   d. Browse to and select the Application Engine .war file:

      ***<AE_Install_path>*/FileNet/Workplace/app_engine.war**.

   e. Provide an Application Name (eg. Workplace).

   f. Provide a Map to URL value (eg. /Workplace).

g.   Click **Deploy**.

h.   Once the application successfully deploys, click **OK**.

6.   Set the workaroundOAS context-param to true.

After you deploy the Workplace application you must set the workaroundOAS context-param to true in the following file:

> ***<Oracle_HOME>*/j2ee/*<OC4J_instance>*/applications/*<WebApp_name>*/Workplace/WEB-INF/web.xml**

Where <WebApp_name> is the name of your web application (E.g. Workplace).

To set the workaroundOAS entry

a.   Open the file web.xml for editing.

b.   Find the workaroundOAS entry in the context-param section:

```
<context-param>
        <param-name>workaroundOAS</param-name>
        <param-value>true</param-value>
</context-param>
```

NOTE If the workaroundOAS entry doesn't exist, create it in the same section of the web.xml file as the other context-param elements.

c.   Set the param-value entry to **true**.

d.   Save the web.xml file.

7.   Configure classloading settings.

After deployment, you must set the OC4J instance to allow for the loading of local classes first.

a.   In the console, click the OC4J instance you created in "From the Oracle Admin Console, use an existing OC4J Instance or create and name a unique OC4J Instance to use with your Application Engine." on page 228.

b.   Click **Applications**.

c.   Under Deployed Applications, click the **Workplace** application link (or the application name specified during deployment).

d.   Under Web Modules, click **Workplace**.

e.   Under Administration, click **Advanced Properties**.

f.   Use the *Edit orion-web.xml* field to enable class loading by un-commenting the following line:

```
<web-app-class-loader search-local-classes-first="true" include-war-manifest-class-path="true" />
```

g.   Click **Apply** to save the changes.

h.   When prompted, click **Yes** to restart your OC4J server instance.

i.   Click **OK** to close the confirmation window.

8.   From the admin console, verify that the Workplace application and the HTTP server have started.

If they have not started, start them manually.

9. Set permissions for the user running the application server.

    If the user that will be running the application server is different from the user that installed AE, you must give the user read/write permissions on the following folders:

    UNIX:

    > **<AE_install_path>/FileNet/**

    Windows (only required for NTFS formatted partitions):

    > **<AE_install_path>\FileNet**

10. (UNIX only) Verify that the P8TASKMAN_HOME system environment variable is set.

    The P8TASKMAN_HOME system environment variable should be set to:

    ```
    P8TASKMAN_HOME=<AE_install_path>/CommonFiles
    ```

Task 15e: Configure and start Application Engine (Sun Java Application Server)

This topic covers the configuration, deployment, and start of your Application Engine application (Workplace) on Sun Java Application Server.

NOTE The Application Engine uses cookie names for passing session information between the Application Engine and the client browser. This session information affects how the Application Engine interacts with several applets, such as Process Designer, Search Designer, and Process Simulator. To avoid forcing end users to log in individually to each applet, do not configure the application server to use application-unique cookie names for the deployed Application Engine. For best results, use JSESSIONID for the cookie name.

To configure and start Application Engine

NOTE The following procedure contain pathnames for both UNIX and Windows. If there is no difference in directory structure, a forward slash (/) will be used to separate the elements of a pathname for both UNIX and Windows.

1. Start the Sun Java Application Server.

2. Set JVM memory settings.

    a. From the admin console, in the left pane, click **Application Server**.

    b. Select the **JVM Settings** tab.

    c. Click the **JVM Options** link.

    d. Scroll to the bottom of the page and look for the following entry:

    `-Xmx512m`

    NOTE Please refer to your application server vendor's documentation for recommended values.

    e. Click **Save** to save your settings.

3. Deploy and configure the Workplace application on your application server.

    a. From the admin console, navigate to **Application Server > Applications > Web Applications**.

    b. In the right pane, click **Deploy**.

    c. Select the application to deploy by browsing to and selecting the Application Engine .war file:

    ***<AE_Install_path>*/FileNet/Workplace/app_engine.war**.

    d. Click **Next**.

    e. Change the Application Name and Context Root entries to *Workplace*.

    f. Click **OK** to deploy the application.

4. Stop the Sun Java Application Server.

5. Copy the Workplace jars.

    Copy the xercesImpl.jar, xml-apis.jar, and xalan.jar files from:

    ### *<AE_Install_Path>*/WEB-INF/lib

    to:

    ### *<Sun_Java_AS_home>*/lib/endorsed

6. Edit processLauncher.xml and launcher.xml.

    The files can be found in:

    ### *<Sun_Java_AS_home>*/lib/

    Comment out all references to the following properties:

    *   javax.xml.parsers.SAXParserFactory

    *   javax.xml.parsers.DocumentBuilderFactory

    *   javax.xml.transform.TransformerFactory"

    *   org.xml.sax.parser

    *   org.xml.sax.driver

7. Update your server.policy file.

    Edit the server.policy file found in:

    ### *<Sun_Java_AS_home>*/domains/<$your_domain>/config

    The file must include the code highlighted bold in the example below.

    Example: Basic set of required permissions granted to all remaining code

    ```
    grant {
        permission java.lang.RuntimePermission  "loadLibrary.*";
        permission java.lang.RuntimePermission  "queuePrintJob";
        permission java.net.SocketPermission    "*", "connect";
        permission java.io.FilePermission       "<<ALL FILES>>", "read,write,delete";
        // work-around for pointbase bug 4864405
        permission java.io.FilePermission "${com.sun.aas.instanceRoot}${/}lib${/}databases${/}-",
        "delete";
        permission java.io.FilePermission "${java.io.tmpdir}${/}-", "delete";
        permission java.util.PropertyPermission "*", "read";
        permission java.lang.RuntimePermission     "modifyThreadGroup";
    };
    grant codeBase "file:${com.sun.aas.instanceRoot}/applications/j2ee-modules/Workplace/WEB-INF/-
    " {
    permission java.security.AllPermission;
    };
    ```

8. Configure classloading settings.

    Update the sun-web.xml file with the correct class-loader settings:

    ```
    <class-loader delegate="false"/>
    ```

    The sun-web.xml file is stored in the deployed Workplace directory:

    ### *<Sun_Java_AS_home>*/domains/<$your_domain>/applications/j2ee-modules/Workplace/
    WEB-INF/sun-web.xml

Example sun-web.xml file:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE sun-web-app PUBLIC "-//Sun Microsystems, Inc.//DTD Application Server 8.1 Servlet
2.4//EN" "<<<http://www.sun.com/software/appserver/dtds/sun-web-app_2_4-1.dtd>>>">
<sun-web-app>
    <context-root>/Workplace</context-root>
    <class-loader delegate="false"/>
</sun-web-app>
```

9. Remove .jar files.

    Remove the ,jar files listed below from the following directory:

    ***<Sun_Java_AS_home>*/domains/<\$your_domain>/applications/j2ee-modules/Workplace/
    WEB-INF/lib/**

    Files to remove:

    *   xalan.jar

    *   xercesImpl.jar

10. Start the Sun Java Application Server.

11. Set permissions for the user running the application server.

    If the user that will be running the application server is different from the user that installed AE, you
    must give the user read/write permissions on the following folders:

    UNIX:

    ***<AE_install_path>/*FileNet/**

    Windows (only required for NTFS formatted partitions):

    ***<AE_install_path>\\FileNet**

12. (UNIX only) Verify that the P8TASKMAN_HOME system environment variable is set.

    The P8TASKMAN_HOME system environment variable should be set to:

    ```
    P8TASKMAN_HOME=<AE_install_path>/CommonFiles
    ```

Task 15f: Configure and start Application Engine (Generic application server)

This topic covers the configuration, deployment, and start of your Application Engine application (Workplace) on generic application servers.

NOTE The Application Engine uses cookie names for passing session information between the Application Engine and the client browser. This session information affects how the Application Engine interacts with several applets, such as Process Designer, Search Designer, and Process Simulator. To avoid forcing end users to log in individually to each applet, do not configure the application server to use application-unique cookie names for the deployed Application Engine. For best results, use JSESSIONID for the cookie name.

To configure and start Application Engine:

1. (Application servers using JDK1.3 only) Modify the java.security file.

   a. Use a text editor to open the java.security file used by the application server, and typically stored in the following location:

      ***<JDK_1.3_Home>*/jre/lib/security**

   b. Add the following line, specifying a preference order that does not conflict with an existing entry:

      ```
      security.provider.n=com.sun.crypto.provider.SunJCE
      ```

      where n is the preference order value. For example, in the example below, you can specify a preference order value of 3 or higher.

      NOTE If you want to use a JCE provider other than SunJCE, make sure it is compatible with the JDK version in use and supports the Blowfish algorithm in ECM mode. Follow the JCE vendor's instructions for installation.

      The following is an example from the JDK 1.3 java.security file:

      ```
      #
      # List of providers and their preference orders (see above):
      #
      security.provider.1=sun.security.provider.Sun
      security.provider.2=com.sun.rsajca.Provider
      ```

   c. Save and close the java.security file.

2. Start the application server.

3. Deploy and configure the Workplace application on your application server.

   NOTES

   • If your application server requires a .war file to deploy the web application, this can be found at ***<AE_Install_path>*/FileNet/Workplace/app_engine.war**.

   • The installer will create the Application Engine folder structure and files needed for the Application Engine application. Configure and deploy the Workplace application according to the instructions from your application server vendor.

4. Set permissions for the user running the application server.

    If the user that will be running the application server is different from the user that installed AE, you must give the user read/write permissions on the following folders:

    UNIX:

    > ***<AE_install_path>/FileNet/***

    Windows (only required for NTFS formatted partitions):

    > ***<AE_install_path>\FileNet***

5. (UNIX only) Verify that the P8TASKMAN_HOME system environment variable is set.

    The P8TASKMAN_HOME system environment variable should be set to:

    ```
    P8TASKMAN_HOME=<AE_install_path>/CommonFiles
    ```

Task 16: Install Service Packs and patches for core components

Install any Service Packs and patches containing new fixes and features for the IBM FileNet P8 Platform.
See "Apply Service Packs and patches for core components" on page 334.

Configuration/Startup Tasks

To configure the IBM FileNet P8 Platform components

1. Set bootstrap preferences. Do Task 17 on page 238.

2. Start Process routers. Do Task 18 on page 242.

3. Initialize the isolated region. Do Task 19 on page 244.

4. Configure symmetric encryption. Do Task 20 on page 245.

5. Set up Content Engine SSL security. Do Task 21a on page 249.

6. Set up Process Engine SSL security. Do Task 21b on page 251.

7. Set up Application Engine SSL security. Do Task 21c on page 253.

8. Perform additional configuration tasks. Do Task 22 on page 256.

9. Familiarize yourself with IBM FileNet P8 system startup and shutdown procedures. Read the FileNet P8 Platform Shutdown and Startup help topic found at: FileNet P8 Administration > Enterprise-wide Administration > Shutdown and Startup.

Task 17: Set bootstrap preferences

Bootstrap preferences are a category of site preferences. The first time you log onto Application Engine after installation, the **Bootstrap Preferences** page displays.

The following six bootstrap preference groups are available the first time you log in:

- Security Info (required for SSL only)

- User Token Settings

- Preference Settings (required)

- Banner Image

- Application Integration

- Administrator Access Role

For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Workplace > Admin Tools > Site Preferences > Bootstrap preferences.

NOTES

- By successfully signing in to Workplace and saving the bootstrap preferences, you are verifying the Application Engine's basic functionality such as user authentication as well as communication and storing of data on the Content Engine.

- In addition to the preferences covered in this topic, more preferences can be set for the Workplace application using Workplace Site Preferences. For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Workplace > Admin Tools > Site Preferences.

- After the initial bootstrap configuration, users with the Application Engine Administrators role can change any of these preferences by launching Workplace and navigating to **Admin > Site Preferences > Bootstrap**.

- When you access the bootstrap preference page via the Site Preferences application, an additional preference, **Guest info** (to allow guest sign ins), is also available.

- In a web farm/clustered environment, all Application Engines share site preferences by using the same **bootstrap.properties** file. For more information, see the IBM FileNet P8 Platform High Availability Technical Notice.

- Bootstrap properties are stored in a separate file from other site preference. The default location for this file, **bootstrap.properties**, is:

  – UNIX (WebSphere) - *<WebSphere_home>***/installed Apps/Workplace.ear/app_engine.war/ WEB-INF**

  – UNIX (all other application servers) - *<AE_install_path>***/FileNet/Workplace/WEB-INF**

  – Windows (WebSphere) - *<WebSphere_home>***\installed Apps\Work- place.ear\app_engine.war\WEB-INF**

  – Windows (all other application servers) - *<AE_install_path>***\FileNet\Workplace\WEB-INF**

- (New installations only) To allow users to create workflows subscriptions, you *must* configure the PWDesigner access role. For more information, see "(New installations only) To enable user access to the Workflow Subscription Wizard" on page 241.

To set the bootstrap properties on first login

1. Log onto Application Engine:

    a. On any computer, open a browser and type:

        ```
        http://<ApplicationEngineServerName>:<port#>/Workplace
        ```

    b. Sign in. The **Bootstrap Preferences** page opens.

        NOTE It may take a few moments to complete the login on the first attempt.

        NOTE The user who initially logs in and sets the bootstrap preferences is automatically added to the Application Engine Administrators role. For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Workplace > Admin Tools > Site Preferences > Access Roles preferences.

2. Enter security info (required for SSL only)

    a. Enter the **SSL Host** and **port** information for the SSL server.

    b. Enter the **Java Server HTTP port**.

    Use the Security info preference to redirect sign-ins through a Secure Socket Layer (SSL) server and to identify a remote Java server. This encrypts the user IDs and passwords when they travel over the network. See "Set up Application Engine SSL security" on page 253 for instructions on setting up SSL security for one or more Application Engines.

    CAUTION Once you've configured SSL, the Site Preferences application also runs under SSL to protect the guest account's user ID and password. This means that when you run Site Preferences on an unsecured server that redirects sign-ins to an SSL server, you will be editing the Bootstrap preferences of the SSL server (stored in the bootstrap.properties file). This does not affect the General, Object Store, and Shortcut preferences; those preferences are retrieved from the preferences file saved in the object store.

3. Configure user token settings.

    User Tokens are used by IBM FileNet P8 applications to launch into each other without the need for additional login.

    a. Select whether or not to create user tokens for your Application Engine (Default: **Yes**).

    b. Select whether or not the application will pick up generated tokens from other applications (Default: **Yes**).

    c. Specify a Token timeout interval (1 - 15 minutes).

4. Specify preference settings (required).

    Preference settings specify the name of the site preference file, its storage location (object store), and the documentation server URL (if installed). The site preferences file is checked into the object store the first time you log on to Workplace. The site preferences are stored as XML data in this file, **<Site Preferences for *Preferences name*>.xml**. Use Enterprise Manager to access this file, and navigate to **Object Stores > *Object Store location* > Root Folder > Preferences**.

    NOTE The bootstrap preferences are saved in the **bootstrap.properties** file, and not in the site preferences file.

    a. Select an object store from the **Object store location** choice list. The preferences file will be saved in this object store. Workplace users must have access to this object store.

   b. Enter a preference file name in the **Preferences name** field.

   c. Enter the documentation server URL in the **Documentation server** filed.

       The format of the URL is:

           `http://<DocServerName>:<port#>/ecm_help/`

       where "DocServerName" is the name of your Java web server, "port#" is the port number, and "ecm_help" is the root directory of the documentation website.

       NOTE If no documentation URL is specified, the Workplace Help link will default to `http://localhost`.

   d. Enter the ISRA Interface Servlet URL.

       For more information, see "Enable Application Engine to use ISRA" on page 287.

5. Set Banner Image.

    The banner image is the graphic that appears at the upper left -hand side of the Workplace application pages. If you have a banner image that you would like to use, follow this procedure.

    a. Copy the new graphic file to the location of your choice on Application Engine in the **/FileNet/ Workplace** folder.

    b. In the **Path** box, type the path (relative to the **Workplace** folder) to the new banner graphic file.

    c. In the **Image Width** box, type the width of the image (in pixels).

    d. In the **Image Height** box, type the height of the image (in pixels).

6. Configure Application Integration.

    Select **No** (default), if you do not want users to be prompted to add an email to an object store each time the email is sent.

    Select **Yes**, if you want users prompted to add an email to an object store when the email is sent.

    This preference setting only affects Outlook integration.

7. Add Application Engine Administrators.

    Add the users and groups that will perform Application Engine administration tasks to the *Application Engine Administrators* role.

    NOTES

    • The user who initially logs in and sets the bootstrap preferences is automatically added to the Application Engine Administrators role. For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Workplace > Admin Tools > Site Preferences > Access Roles preferences.

    • To modify the Access Roles after the initial bootstrap configuration, users with the Application Engine Administrators role can use the Access Roles section of the Workplace Site Preferences. Launch Workplace and navigate to **Admin > Site Preferences > Access Roles**.

8. Click **Apply** (bottom, right-hand side of the page) to save your bootstrap settings.

To add a single index for Application Name on the site preferences object store

To properly index access roles and improve login performance on Application Engine you must create an index for Application Name on the object store that contains the Workplace site preferences. Do this after you have successfully configured the bootstrap preferences.

1. On the Content Engine launch the IBM FileNet Enterprise Manager.

2. In the left pane, expand the **Object Stores** folder.

3. Expand the object store node where your preferences are stored. See "Specify preference settings (required)." on page 239 above.

4. Expand **Other Classes** and then **Custom Object**.

5. Right click **Access Role** and select **Properties**.

6. Select the **Property Definitions** tab.

7. Select **Application Name** and click **Edit**.

8. On the General tab of the Application Name Properties, if the **Indexed** field shows 'not indexed', click **Set/Remove**.

9. Select **Set** and then **Single Indexed**.

10. Click **OK** to set the index.

11. Click **OK** to apply the change and close the Application Name Properties window.

12. Click **OK** to close the Access Role Class Properties window.

(New installations only) To enable user access to the Workflow Subscription Wizard

To allow users to create workflows subscriptions, you *must* configure the PWDesigner access role using the Workplace Site Preferences, and give the users appropriate access rights to the workflow subscriptions classes. You can perform these steps in any order, and you must perform both steps any time you need to add or remove users.

1. Assign users as members of the PWDesigner access role. See Workplace > Admin Tools > Site Preferences > Access Roles preferences.

2. Run the security script wizard, load the **workplacescript.xml** file to add accounts to the Workflow Designer role.

    a. In IBM FileNet Enterprise Manager, select *Root Domain* > All Tasks > Run Security Script Wizard.

    b. Load the *<install_path>*/**ContentEngine/workplacescript.xml** file.

    For more information about how to use the Security Script wizard to assign the Workflow Designer role to user or group accounts, go to the *Documentation for IBM FileNet P8 Platform* help and see FileNet P8 Administration > Content Engine Administration > Content Engine Wizard Help > Security Script.

    For more information about the **workplacescript.xml** file and how roles are defined in the Enterprise Manager, see FileNet P8 Administration > Content Engine Administration > Managing Security > Security Script Wizard.

Task 18: Start Process Routers

To enable workflow activity, at least one Process Router must be running on each Application Engine. In addition, a Process Router must be running on the Content Engine in a system where workflow subscriptions are used to automatically launch workflows. No matter where it is running, a Process Router corresponds to a single isolated region.

By default, a router is named vwrouter, running on the Application Engine and using as a default RMI PPM port number 32771. If the host system, port number, or router name need to be changed, corresponding changes must be made on the Process Engine and on the Application Engine. See FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Application Engine > Process Routers and FileNet P8 Administration > Workplace >Admin Tools > Site Preferences > General Preferences > General Settings - Tasks > Process Router.

To start a Process Router on an Application Engine

To start the router, you must have read/write/execute permissions for the /Router subdirectory (UNIX) or \Router subfolder (Windows) where the router is installed.

Note the following additional requirements for systems that include a remote HTTP server:

*   If users need to access the Process Configuration Console via a remote HTTP server, you must start one Process Router on the HTTP server for each Process Router running on Application Engine. The Process Router on the HTTP server must use the same Process Router name and port number as the corresponding Application Engine Process Router. See "To start a Process Router on a remote HTTP server" on page 243 for details.

*   If Process Engine and an Application Engine or a remote HTTP server are located on opposite sides of a firewall, you must add an entry to the hosts file on Process Engine, mapping the Application Engine's or remote HTTP server's IP address to its fully qualified name.

1. Set the DISPLAY variable.

2. Start Process Task Manager on Application Engine.

    a. Windows: Run the **routercmd.bat** command file, found in the \Router subfolder where you installed the Application Engine software.

    b. UNIX: Run the **routercmd.sh** command file, found in the \Router subfolder where you installed the Application Engine software.

3. Select **Process Routers** in the left pane (also referred to as the feature pane).

4. If necessary, add a new Process Router.

    a. Select **New** from the **Action** menu.

    b. Enter the appropriate parameter values. For details, see FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Application Engine > Process Routers.

    c. Click **OK**.

5. In the feature pane, select the Process Router you want to start and click **Start** on the toolbar.

To start a Process Router on a remote HTTP server

The same version of the JVM installed on Application Engine must also be installed on the HTTP server.

1. Copy pe.jar from Application Engine to the HTTP server. On Application Engine,
   pe.jar is located at:

   > ***<directory where Application Engine is installed>*:\FileNet\Workplace\WEB-INF\lib**

2. Start a Process Router from the command line on the HTTP server, using the same Process Router name and port number you used for the corresponding Process Router on Application Engine. For details, see FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Application Engine > Process Routers > Configure Process Router defaults.

3. If Application Engine and the HTTP server are separated by a firewall, add an entry to the hosts file on Process Engine, mapping the Application Engine's or remote HTTP server's IP address to its fully qualified name.

To add and start a Process Router on the Content Engine

1. From the **Start** menu, select **Programs > FileNet P8 Platform > Process Service Administrator**.

2. Expand the Process Service Administrator node.

3. Right-click **Process Engine Routers** and select **New/New Router** from the context menu.

4. As appropriate, add, edit, or retain the information displayed in the New Router window. For details, point a browser to the IBM FileNet P8 documentation server and navigate to: FileNet P8 Administration > Content Engine Administration > Events and subscriptions > How to... > Implement workflow subscriptions > Manage the Process Router.

5. Select the router in the folder, and click the start icon on the toolbar.

Task 19: Initialize the isolated region

Initialize an isolated region to create the default data structures (queues, workflow roster, and event log) necessary to process workflows in that region.

To initialize the isolated region:

1. On a client computer (not Application Engine), start a supported browser.

2. Log on to Workplace.

    If you defined the *Process Engine Configuration Group* on the LDAP tab of Process Task Manager (when completing "Configure the Process Engine LDAP Connection" on page 204), you must log on as a member of either that group or the *Process Engine Administrators Group*, which was also defined on the LDAP tab, in order to initialize the isolated region.

3. In Workplace, click **Admin** and then click **Process Configuration Console**.

    NOTE If your computer does not have the appropriate Java^{TM} Runtime Environment (JRE) installed, you will be prompted to download the JRE at this point; follow the prompts to complete the download. During the installation process, click the **Browser** tab and enter the following settings:

    –   De-select (clear) the Internet Explorer option.

    –   If you will be using Netscape 6.0, select the Netscape option.

    For further information about the JRE download, click **Help** in Process Configuration Console, click **Process Reference** on the help page toolbar, and navigate to Concepts > Java Runtime Environment (JRE).

4. Right-click the icon of the isolated region you want to initialize.

5. Select **Connect** from the displayed menu.

6. Select **Initialize Isolated Region** from the **Action** menu.

7. Click **Yes** at the prompt if you want to continue, or **No** to cancel the action.

For further details about initializing an isolated region, in Process Configuration Console click the **Help** button and navigate to Isolated regions > Initialize an isolated region.

Task 20: Configure symmetric encryption

Encryption protects user credentials passed between Application Engine and Content Engine. Symmetric encryption uses a single crypto key to encrypt the credentials at one end of the process and to decrypt the credentials at the other end of the process.

If you selected symmetric encryption during setup, the setup program generated an encryption key file called **CryptoKeyFile.properties** in the following default location:

- Windows/WebLogic, WebSphere, and Tomcat - ***<AE_install_path>*\FileNet\Authentication**

- Windows/Generic - ***<AppServer_home>*\FileNet\Authentication**

- UNIX - ***<AE_install_path>*/FileNet/Authentication**

To configure symmetric encryption

1. Copy the **CryptoKeyFile.properties** file from Application Engine to the following folder on the Content Engine(s):

    C:\Program Files\FileNet\Content Engine\JavaAPIListener\Authentication

    NOTES

    - If the **Authentication** folder doesn't exist on the Content Engine server, create it.

    - We recommend copying the folder over a secure link.

    - If you copy the file to a location on the Content Engine other than the one listed above, you will also need to modify the Content Engine's registry to match the new name or path; the Content Engine installation adds the registry key **CryptoKeyFile**, with a value that defines the name of the file and the default path.

    CAUTION Back up your registry before making any changes.

    To change the value, open the registry and navigate to:

    HKEY_LOCAL_MACHINE\SOFTWARE\FileNet\ECM\Content Engine\JavaAPIListener\Authentication

    Change the data value of CryptoKeyFile to the new path and filename.

2. Install unlimited strength .jar files.

    NOTE Perform this step only if you are using JDK 1.4 or higher and have selected the **Create unlimited strength keys** option in the *Application Engine User Security* and/or *User Token Security* steps of the Application Engine installer. Failure to perform the step will cause EncryptionException messages or other errors indicating that a Java Security API provider for Blowfish is not available. The EncryptionException is caused by the wrong versions of (or absence of) required .jar files that provide unlimited strength security policy files in a Sun JDK 1.4 or higher environment.

    For more information, go to the *Documentation for IBM FileNet P8 Platform* website and navigate to Developer Help > Content Java API > Security > Working with Security > Creating Cryptographic Keys for Symmetric Encryption > Configuring a Security Provider for a J2EE Application Server Environment.

To install unlimited strength .jar files:

a.   Obtain the JDK version specific unlimited strength .jar files.

   • Sun JDK - Obtain the Sun unlimited strength policy files from the Sun product web site (http://java.sun.com/j2se/).

   • IBM JDK - Obtain the IBM unlimited jurisdiction policy files from the IBM web site (http://www.ibm.com/developerworks/java/jdk/security).

   CAUTION   Make sure you install .jar files specific to the JDK version you are using.

b.   Install the files into the JRE's **/jre/lib/security** folder by replacing files with the same names.

c.   Restart the application server.

3.   (Do this step if you are experiencing problems with IBMJCE when using IBM JDKs, and if you have available another JCE provider.)

Configure WebSphere to use this vendor's security provider. For more information, see the JCE provider's documentation.

Example: If you are using SunJCE, do the following:

a.   Use a text editor to open the java.security file stored in the following location: ***<WAS_Home>*/java/jre/lib/security**.

b.   Add the line "`security.provider.1=com.sun.crypto.provider.SunJCE`" (shown in bold below) as the first line in the list of providers, and adjust the existing provider numbers accordingly:

```
#
# List of providers and their preference orders:
#
security.provider.1=com.sun.crypto.provider.SunJCE
security.provider.2=sun.security.provider.Sun
security.provider.3=com.ibm.crypto.provider.IBMJCE
security.provider.4=com.ibm.jsse.IBMJSSEProvider
security.provider.5=com.ibm.security.cert.IBMCertPath
security.provider.6=com.ibm.crypto.pkcs11.provider.IBMPKCS11
```

c.   Save and close the **java.security** file.

4.   Verify symmetric encryption by logging into Application Engine:

a.   On any computer, open a browser and type:

```
http://<ApplicationEngineServerName>:<port#>/Workplace
```

b.   Sign in.

Web Farms/Cluster/SSL Environments

In an environment with multiple Application Engines, each Application Engine must share the **WcmApiConfig.properties** file and the **CryptokeyFile.properties** data with the Content Engine to identify the encryption method.

NOTE You have the option of having each Application Engine use its own unique key, or have all share encryption keys, or all use a common encryption key.

To set up symmetric encryption on multiple applications

1. Copy the WcmApiConfig.properties file to all Application Engines.

    The **WcmApiConfig.properties** file identifies symmetric encryption as the credentials protection method, and the path to the **CryptoKeyFile.properties** file. Each Application Engine in the environment must have an identical **WcmApiConfig.properties** file.

    The default location for the **WcmApiConfig.properties** file is:

    ***<AE_install_path>*\FileNet\Workplace\WEB-INF**

2. Copy the CryptokeyFile.properties file.

    For encryption to work, the Content Engine and each Application Engine must share the same crypto key.

    To use the same crypto key for all Application Engines

    Each AE may have its own unique CryptoKeyFile and the contents of each file can be copied into the CryptoKeyFile on the CE.

    a. Copy the **CryptoKeyFile.properties** file from one Application Engine to:

    C:\Program Files\FileNet\Content Engine\JavaAPIListener\Authentication

    on the Content Engine server.

    NOTES

    - We recommend copying the file over a secure link.

    - If the **Authentication** folder doesn't exist on the Content Engine server, create it.

    b. Copy the **CryptoKeyFile.properties** file you copied to the Content Engine to the **Authentication** folder on all Application Engines in the environment, overwriting the existing **CryptoKeyFile.properties** file.

    To use unique crypto keys for each Application Engine

    Each Application Engine may have its own unique **CryptoKeyFile.properties** file as long as there is a copy of each Application Engine's crypto key in the **CryptoKeyFile.properties** file stored on the Content Engine.

    NOTE This is useful especially if users want to have one Application Engine with limited strength jars and one with unlimited strength jars.

    a. Copy the **CryptoKeyFile.properties** file from Application Engine to:

    C:\Program Files\FileNet\Content Engine\JavaAPIListener\Authentication

    on the Content Engine server.

    NOTES

    - We recommend copying the file over a secure link.

    - If the **Authentication** folder doesn't exist on the Content Engine server, create it.

    b. Edit the **CryptoKeyFile.properties** file on the Content Engine server.

    c. Add the contents of each unique **CryptoKeyFile.properties** file to the content of the Content Engine file.

Change the encryption method

To change the encryption method, edit the `CredentialsProtection` entry in the
WcmApiConfig.properties file.

For information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to FileNet P8
Administration > Application Engine Administration > Application Engine Security >
WcmApiConfig.properties file.

NOTE If you installed Application Engine with Clear encryption and subsequently change the encryption
method to Symmetric, you will have to manually create the **CryptoKeyFile.properties** file before you
change encryption method. After creating the file you need to distribute it among your servers, see Step 2
on page 247.

For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Developer
Help > Content Java API > Security > Working with Security > Creating Cryptographic Keys for Symmetric
Encryption.

Generate additional crypto keys

By default, the Application Engine setup program generates three crypto keys. To create additional keys,
use the Content Java API class, **MakeCryptoKeys**.

For information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Developer Help
> Content Java API > Security > Working with Security > Creating Cryptographic Keys for Symmetric
Encryption.

Task 21a: Set up Content Engine SSL security

By default, Content Engine is configured to support secure communications with Microsoft Active Directory. However, if your IBM FileNet P8 system uses Sun or Novell as the directory service provider, you must enable SSL on the Content Engine in order to use secure communications with the Sun or Novell directory service.

CAUTION IBM strongly recommends enabling SSL. The option not to use SSL is provided primarily for development systems or other non-production systems where the security provided by SSL may not be required.

To enable SSL for Content Engine

1. Obtain and install a server certificate and a CA certificate on the Sun or Novell directory service. These certificates are available from third-party certificate authorities, such as VeriSign, or you can generate your own certificates if you have the necessary certificate management software installed.

2. Enable SSL on the Sun or Novell directory service and set the SSL port number. The default SSL port number is 636; however, if you have more than one directory service that is using SSL on the server, you may need to use a non-default port number. See your Sun or Novell documentation for instructions.

3. Obtain a certificate authority (CA) certificate for the Content Engine. To obtain a CA certificate, do one of the following. The actual procedures will vary depending on the CA provider you select.

    •   Download the certificate from the CA provider and save it as a file on the Content Engine.

    •   Copy the CA certificate file from the Sun or Novell directory service computer to the Content Engine. Use this method if you saved the CA certificate as a file when enabling SSL on the directory service.

4. Import the CA certificate to the Content Engine, as described below.

5. If your authentication support is provided by Sun Java Directory Server or Novell eDirectory, add an entry for the authentication server in the hosts file on each machine where an Object Store Service or IBM FileNet Enterprise Manager client is installed:

    <IP address> <hostname> <hostname - FQDN>

    where:

    <IP address> is the IP address of the authentication server
    <hostname> is the name of the authentication server
    <hostname - FQDN> is the fully qualified domain name of the authentication server

    For example:

    10.15.15.99   myHost   myHost.xyz.com

To import the CA certificate to Content Engine

1. Log on as the local administrator to the server where you plan to install Content Engine or IBM FileNet Enterprise Manager.

2. From the Microsoft Management Console (MMC), open the **Certificates** Snap-in. If the Certificates Snap-in is not already part of your MMC, add the snap-in by completing the following steps.

    a. Open the MMC by selecting **Start > Run** from the Windows Task bar and typing `mmc` in the Run dialog.

    b.   From the Console menu select **Add\Remove Snap-in**.

    c.   On Add/Remove Snap-in dialog click the **Add** button.

    d.   On the Add Standalone Snap-ins dialog, select **Certificates** from the list box and click the **Add** button.

    e.   On the Certificates snap-in dialog select the **Computer Account** radio button and click **Next**.

    f.   On the Select Computer dialog select the **Local Computer** radio button and click **Finish**.

    g.   Click **Close** on the Add Standalone Snap-ins dialog.

    h.   Click **OK** on Add/Remove Snap-in dialog.

3.   On the MMC dialog, expand the Certificates node and then expand the Trusted Root Certification Authorities node.

4.   Right-click on the Certificates folder and select **All Tasks / Import**. The Certificate Import Wizard appears.

5.   Click **Next**.

6.   On the File to Import dialog, click **Browse** and locate the CA certificate you copied to the Content Engine server.

7.   Click **Next**.

8.   On the Certificate Store dialog, select **Place all certificates in the following store** and click **Browse**.

9.   Select the **Show physical stores** checkbox.

10. Expand the Trusted Root Certification Authorities node and select **Local Computer**.

11. Click **OK**.

12. Review the Certificate store field and ensure that **Trusted Root Certification Authorities\Local Computer** appears in this field.

13. Click **Next** and then click **Finish**. The wizard displays a message informing you that the import was successful.

14. Click **OK**.

15. In the right pane, verify that the certificate imported successfully into the Trusted Root Certification Authorities\ Certificates folder.

Task 21b: Set up Process Engine SSL security

Process Engine supports both secure and clear text communications with the IBM FileNet P8 directory service. By default, Process Engine is configured to support clear text communications; user names and passwords are sent between Process Engine and the directory service unencrypted. To enable secure communications, you must enable SSL support on your directory service and on Process Engine.

CAUTION IBM strongly recommends enabling SSL. The option not to use SSL is provided primarily for development systems or other non-production systems where the security provided by SSL may not be required.

To enable SSL for Process Engine:

1. Obtain and install a server certificate and a CA certificate on the directory service. These certificates are available from third-party certificate authorities, such as VeriSign, or you can generate your own certificates if you have the necessary certificate management software installed.

2. Enable SSL on the directory service and set the SSL port number. See your directory service documentation for instructions.

3. Obtain a certificate authority (CA) certificate for Process Engine. To obtain a CA certificate, do one of the following. The actual procedures will vary depending on the CA provider you select.

    •   Download the certificate from the CA provider and save it as a file on Process Engine.

    •   Copy the certificate to your clipboard directly from the CA provider.

    •   Copy the CA certificate file from the directory service computer to Process Engine. Use this method if you saved the CA certificate as a file when enabling SSL on the directory service.

4. Create a certificate database for Process Engine, as described below.

5. Enable SSL support on Process Engine, via Process Task Manager. See for further information.

To create a certificate database for Process Engine

NOTES

•   Perform steps 1 – 5 of this procedure on a Windows 2000 or Windows XP client.

•   This procedure uses the Mozilla certutil utility to generate the certificate database; documentation for this utility is available at:

    http://www.mozilla.org/projects/security/pki/nss/tools/certutil.html

1. Download and unzip Netscape Security Services (NSS) version 3.6.1 and Netscape Portable Runtime (NSPR) version 4.3 to a temporary location on a Windows 2000 or Windows XP client. NSS and NSPR are available for download from the Mozilla web site at:

    NSS:

        FTP: ftp://ftp.mozilla.org/pub/mozilla.org/security/nss/releases
        HTTP: http://ftp.mozilla.org/pub/mozilla.org/security/nss/releases

    NSPR:

        FTP: ftp://ftp.mozilla.org/pub/mozilla.org/nspr/releases
        HTTP: http://ftp.mozilla.org/pub/mozilla.org/nspr/releases

2. Modify the environment variables by adding the bin and lib directories for NSS and the lib directory for NSPR to the beginning of the PATH environment variable.

3. At the command prompt, create the certificate databases as follows:

    certutil -N -d <*certificate_db_directory*>

    where <*certificate_db_directory*> is the certificate database directory. Note that this directory must exist before you run the certutil command.

    Certutil will prompt you to enter a password for the certificate databases and will then create three databases (cert7.db, secmod.db, and key3.db) in the location you specify.

4. Import the CA certificate into the certificate database as follows:

    certutil -A -n <*certificate_name*> -t C,C,C -d <*certificate_db_directory*> -i <*certificate_file*>

    where:

    <*certificate_name*> is the name you want to assign to the certificate. The certificate will appear in the cert7.db database under this name.

    <*certificate_file*> is the name and location of the certificate you copied to Process Engine, for example, c:\temp\root_CA.cer.

5. Verify that the certificate was imported correctly as follows:

    certutil -L -d <*certificate_db_directory*>

    The system displays a list of certificates in the database.

6. Copy the <*certificate_db_directory*> you specified in Step 3 to the appropriate location **on your Process Engine**, depending on the Process Engine's operating system:

    UNIX: /fnsw/local/sd

    Windows: \fnsw_loc\sd

7. (UNIX only) Assign read permission for all users on the cert7.db, secmod.db, and key3.db files by completing the following steps.

    a. Change directories to the <*certificate_db_directory*>.

    b. Execute the following statement.

        chmod 644 cert7.db secmod.db key3.db

To enable SSL Security in Process Task Manager

After completing the procedures described in Step 1 through Step 4 on page 251, use Process Task Manager to set the *Communication Mode* and *Certificate Directory* properties on Process Engine accordingly:

Communication Mode: Choose S*ecure (one-way SSL)*

Certificate Directory: Enter the <*certificate_db_directory*>

In Process Task Manager, both properties are located on the LDAP/General properties tab, see "Configure the Process Engine LDAP Connection" on page 204 for instructions on accessing this tab.

Task 21c: Set up Application Engine SSL security

This topic describes how to configure an Application Engine to direct sign-ins through an SSL (https) connection. It assumes that Application Engine(s) have already been installed.

IBM FileNet Application Engine supports the following methods of configuring an SSL environment:

- Full SSL support - A single AE server, where all of the software is running under SSL.

- One server SSL redirect - One AE server set up to redirect logon attempts on the non-SSL port to the SSL port.

- Two server SSL redirect - Two AE servers, where one is SSL-enabled, and the other redirects users to the SSL-enabled Application Engine server to log on.

To set up full SSL support on a single Application Server

1. Enable SSL on the application server that runs Application Engine (see your SSL documentation).

2. Test the SSL connection by signing into Application Engine using one of the following URLs:

    ```
    https://<Application_Engine_server_name>:<SSL port>/Workplace
    ```

    The entire sign-in process will be handled by the SSL-enabled host.

    For more information about SSL port numbers, see "IBM FileNet P8 Port Numbers" on page 364.

To set up SSL redirect on a single Application Engine server

1. Enable SSL on the application server that runs Application Engine (see your SSL documentation).

2. Log onto Application Engine:

    a. On any computer, open a browser and type:

    ```
    http://<Application_Engine_server_name>:<port#>/Workplace
    ```

    b. Sign in as a user with Application Engine Administrator access role privileges. For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Workplace > Admin Tools > Site Preferences > Access Roles preferences.

3. Set bootstrap preferences:

    a. Navigate to **Admin > Site Preferences > Bootstrap**.

    b. Set the Security info Site Preference, **SSL Host:Port**, to identify the alias host name and port number.

    Use the IP address of the Application Engine server for the SSL Host entry.

    For more information, see "Enter security info (required for SSL only)" on page 239.

    c. Click **Apply** (bottom, right-hand side of the page) to save your bootstrap settings.

4. Update the base URL:

    a. Navigate to **Admin > Site Preferences > Refresh.**

    b. Enter the Workplace Base URL value in the provided field. The URL must contain a valid host name, and not contain "localhost" or an IP number. For example, http://myserver:7001/Workplace.

    For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Workplace > Admin Tools > Site Preferences > Refresh preferences.

    c.   Click **Refresh** to update the base URL.

    d.   Click **Exit** to close Site Preferences.

5.   Sign out of Workplace, and close your browser.

6.   Test the SSL connection by signing into Application Engine using the following URL:

     `http://<Application_Engine_server_name>:<non-SSL port>/Workplace`

NOTE You will be redirected to the SSL-enabled port for sign in, then back to the non-SSL enabled port after sign-in is complete. Before sign-in, you should receive a warning that you are accessing pages over a secure connection (unless you turned this dialog off), and then Workplace will display.

To set up SSL redirect on two Application Engine servers

1.   Install Application Engine on both computers so that both Application Engines use the same boot-strap.properties file and site preferences file (the setup program will prompt you for a shared location).

    During setup of the first Application Engine, create a share on the folder where the bootstrap.properties file is installed (the WEB-INF folder). Then during setup of the second Application Engine, specify the shared location from the first installation. The bootstrap.properties file must already exist when specifying a shared location. See "Setup WebLogic clusters" or "Setup WebSphere clones" in the *IBM FileNet P8 Platform High Availability Technical Notice* for specific instructions.

    CAUTION The system clocks on the two Application Engine servers must be synchronized to within the Token time-out interval. For more information, go to the *Documentation for IBM FileNet P8 Platform help* and navigate to Workplace > Admin Tools > Site Preferences > Bootstrap Preferences > User token settings.

2.   Copy the UTCryptokeyFile.properties file.

    For SSL redirect to work, each Application Engine must use the same User Token cryptographic key file.

    After installing the second Application Engine, copy the **UTCryptoKeyFile.properties** file from the first Application Engine server to the same location on the second Application Engine server. See "Make a note of the user token crypto key path." on page 210 for information on the default location for the UTCryptoKeyFile.properties file.

    NOTE We recommend copying the file over a secure link.

3.   Enable SSL on the application server that you are using for the SSL-enabled Application Engine (see your SSL documentation).

4.   Log on to the non-SSL enabled Application Engine.

    a.   On any computer, open a browser and type:

       `http://<ApplicationEngineServerName>:<port#>/Workplace`

    b.   Sign in as a user with Application Engine Administrator access role privileges. For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Workplace > Admin Tools > Site Preferences > Access Roles preferences.

5.   Set bootstrap preferences:

    a.   Navigate to **Admin > Site Preferences > Bootstrap**.

    b.   Set the Security info Site Preference, **SSL Host:Port**, to identify the alias host name and port number.

For more information, see "Enter security info (required for SSL only)" on page 239.

   c. Click **Apply** (bottom, right-hand side of the page) to save your bootstrap settings.

6. Update the base URL:

   a. Navigate to **Admin > Site Preferences > Refresh.**

   b. Enter the Workplace Base URL value in the provided field. The URL must contain a valid host name, and not contain "localhost" or an IP number. For example, http://myserver:7001/Workplace.

   For more information, go to the *Documentation for IBM FileNet P8 Platform* help and navigate to Workplace > Admin Tools > Site Preferences > Refresh preferences.

   c. Click **Refresh** to update the base URL.

   d. Click **Exit** to close Site Preferences.

7. Sign out of Workplace, and close your browser.

8. Test the SSL connection by signing into Application Engine using the following URL:

```
http://<Application_Engine_server_name>:<non-SSL port#>/Workplace
```

NOTE You will be redirected to the SSL-enabled server for sign in, then back to the non-SSL enabled server after sign-in is complete. Before sign-in, you should receive a warning that you are accessing pages over a secure connection (unless you turned this dialog off), and then Workplace will display.

Additional procedure for WebSphere 5.1

If you are using Workplace Application Integration to connect to port 80 on WebSphere, you need to enable URL rewriting for SSL sign-in to work properly.

To enable URL rewriting

1. Open the WebSphere Administrative Console and select **Applications > Enterprise Applications** from the left pane. Then select the Application Engine application (the default is app_engine.war).

2. From Additional Properties, select **Web Container**.

3. Click **Session Management** and click **Edit Properties**.

4. Select **Overwrite** for Overwrite Session Management.

5. Select **Enable URL rewriting** for Session tracking mechanism.

6. Click **OK**, then **Save**, and **Save** again to save changes to the Master configuration

7. Stop and restart the Application Server.

Using Java Applets in an SSL Environment

If you are using a Java applet in an SSL environment, you may experience an SSLHandshakeException because the appropriate certificate does not exist on your computer. Follow the instructions in the online help topic Workplace > Basics > Use Java Applets to resolve this issue.

Task 22: Perform additional configuration tasks

Once you have completed the Installation Tasks, your core IBM FileNet P8 system will be up and running. Below is a list of additional configuration tasks you should complete (or at least review) to prepare the system for general use. Except where noted, the links go to the IBM FileNet P8 online documentation and start from the Contents panel in:

<Documentation URL, in the form http://*webserver:port#ecm_help>*/_start_here.htm

- Create additional users and groups using the Windows Active Directory Users and Computers snap-in. Refer to FileNet P8 Administration > Enterprise-wide Administration > Security > User and groups.

- Configure Content Federation Services for Image Services Guidelines. Refer to the *IBM FileNet P8 Content Federation Services for Image Services Guidelines*.

- Configure Application Engine to set the file types you want to open in a browser window rather than using the Image Viewer. Refer to FileNet P8 Administration > Application Engine Administration > Key configuration files and logs > content_redir.properties file.

- Set site preferences for the Workplace application. Refer to Workplace > Admin Tools > Site Preferences > About Site Preferences.

- Design searches and/or search templates for Workplace users. Refer to Workplace > Advanced Author Tools > Search Designer > About Search Designer.

- Design publishing templates for Workplace users. Refer to Workplace > Advanced Author Tools > Publishing Designer > About Publishing Designer.

- Configure security for publishing. Refer to Workplace > Advanced Author Tools > Publishing Designer > Security > Specify publication document security.

- Configure automatic workflow launch. Refer to FileNet P8 Administration > Content Engine Administration > Events and subscriptions > Concepts: workflow subscriptions.

- Create and configure the object stores that will contain business objects, folders, documents, workflow definitions, searches, and other objects. Refer to FileNet P8 Administration > Content Engine Administration > Object stores > How to... > Create object store.

- Define document classes and folders and set security for each class. Refer to FileNet P8 Administration > Content Engine Administration > Classes.

- Review and, if necessary, edit the security of the network shared folders containing any file stores created for the object store. Refer to FileNet P8 Administration > Content Engine Administration > Content stores > File stores.

- Configure Process Engine for automatic startup. Refer to FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Process Engine > Process Service > Start and stop Process Service > Configure the Process Service for automatic startup (Windows).

- Configure email notification. Refer to FileNet P8 Administration > Process Engine Administration > Workflow administration tasks > Coordinating workflow design > Email notification.

- Set Process Engine runtime options. Refer to Workplace > Admin Tools > Process Configuration Console > VWServices > View or modify VWService properties > Set runtime options.

- Set the default date/time mask for the Process Service. Refer to Process Engine > Process Task Manager > Process Service > Configuring Process Service > General properties.

- Define additional isolated regions. Refer to FileNet P8 Administration > Process Engine Administration > Workflow administration tasks > Maintaining the workflow system > Using isolated regions to separate groups of users.

- For each isolated region:

  – Define workflows. Refer to Workplace > Advanced author tools > Process Designer.

  – Configure event logging options. Refer to Workplace > Admin tools > Process Configuration Console > Isolated regions > View or modify isolated region properties > Configure event logging options.

  – Configure step processors. Refer to Workplace > Admin tools > Process Configuration Console > Isolated regions > View or modify isolated region properties >Configure custom step processors.

  – Define and configure work queues. Refer to Workplace > Admin tools > Process Configuration Console > Queues > Configuring work queues.

  – Define and configure component queues. Refer to Workplace > Admin tools > Process Configuration Console > Queues > Configuring component queues.

  – Define and configure workflow rosters. Refer to Workplace > Admin tools > Process Configuration Console > Queues > Rosters.

Optional Installation Tasks

To install optional IBM FileNet P8 components

NOTE You can install the optional IBM FileNet P8 components listed below in any order. After installing optional components, install any required patches as described in Task 35 on page 294.

- Install and configure IBM FileNet Publishing components. Do Task 23 on page 259.

- Enable Process Engine Component Integrator. Do Task 24 on page 260.

- Install an IBM FileNet Enterprise Manager on a dedicated computer. Do Task 25 on page 263.

- Set up remote Content Engine file stores. Do Task 26 on page 267.

- Install Workplace Application Integration. Do Task 27 on page 275.

- Install Workplace File Tracker. Do Step 28 on page 278.

- Enable Rules Engine integration. Do one of the following:

  – Task 29 on page 279 (If you elected to configure the Rules Engine interface on this computer during Process Engine Setup)

  – Task 30 on page 281 (If you elected not to configure the Rules Engine interface on this computer during Process Engine Setup)

- Set up Web Services Integration. Do Task 33 on page 292.

- Set up IBM FileNet System Manager. Do Task 34 on page 293.

- Install patches for optional components. Do Task 35 on page 294.

- Deploy multiple Application Engine instances. Do Task 31 on page 284.

- Enable Application Engine to use ISRA. Do Task 32 on page 287.

Task 23: Install and configure IBM FileNet Publishing Components

Install the IBM FileNet Rendition Engine and associated Publishing Plug-in software to establish publishing capabilities. See FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

Task 24: Enable the Process Engine Component Integrator

Via the Component Integrator functionality included in the IBM FileNet P8 Platform, a step in a workflow can access properties of documents, folders, and other objects in an object store. Using this functionality requires configuration on both Application Engine and Process Engine, as described in this task.

Post-installation, you will also have to define workflows that incorporate Content Engine (CE) operations in order to use the out-of-the-box Component Integrator functionality. For further details on defining such workflows, in the *Help for Process Designer*, see Steps > Component Steps > General Properties > Using Content Engine (CE) operations in a workflow.

NOTE Also post-installation, users can extend the out-of-the-box Component Integrator functionality so that a workflow step can interact with an external entity such as a Java object or JMS messaging system. For further information, in the *Help for Process Development* see Developing Process Applications > Developing Work Performers / Component Integrator Operations > Developing Component Integrator-Based Workflow Applications.

Specify username and password for the Java adaptor (on Application Engine)

1. Sign in to Workplace.

    If you defined the *Process Engine Configuration Group* on the LDAP tab of Process Task Manager (when completing "Configure the Process Engine LDAP Connection" on page 204), you must log on as a member of either that group or the *Process Engine Administrators Group*, which was also defined on the LDAP tab, in order to complete the following steps.

2. In Workplace, click **Admin** and then click **Process Configuration Console**.

    NOTE If your computer does not have the appropriate Java Runtime Environment (JRE) installed, you will be prompted to download the JRE at this point; follow the prompts to complete the download. During the installation process, click the **Browser** tab and enter the following settings:

    –   De-select (clear) the Internet Explorer option.

    –   If you will be using Netscape 6.0, select the Netscape option.

    For further information about the JRE download, click **Help** in Process Configuration Console, click **Process Reference** on the help page toolbar, and navigate to Concepts > Java Runtime Environment (JRE).

3. Select the Process Router icon that corresponds to the isolated region you initialized in "Initialize the isolated region" on page 244.

4. Click the appropriate **Server #** icon, then open the **Component Queues** folder.

5. Right-click the **CE_Operations** component queue and select **Properties**.

6. On the **Adaptor** tab of the displayed dialog box, enter a user name and password that will be used for identification and access on both Process Engine and Content Engine these operations will access. By default, the user name and password are set to *Administrator* and *<no password>*, respectively. If you choose to use another user name and password, they must already exist on Application Engine. Use a user name *without* a domain qualifier such as "@company.com".

    For additional information about the fields on the Adaptor tab, click the Help button. To use the out-of-the-box functionality, it is necessary to modify only the user name and password fields.

7. Click **OK**.

Configure and start the Component Manager (on Application Engine)

Execute step 1 below if Application Engine is configured to use maximum strength symmetric encryption the JRE used to run the Process Task Manager that contains the Component Manager (which uses JDK 1.4.x) must be updated with Unlimited Strength Jurisdiction Policy Files. Otherwise proceed to step 2 below.

1. Install unlimited strength .jar files.

   NOTE Perform this step only if you are using JDK 1.4 or higher and have selected the **Create unlimited strength keys** option in the *Application Engine User Security* and/or *User Token Security* steps of the Application Engine installer. Failure to perform the step will cause EncryptionException messages or other errors indicating that a Java Security API provider for Blowfish is not available. The EncryptionException is caused by the wrong versions of (or absence of) required .jar files that provide unlimited strength security policy files in a Sun JDK 1.4 or higher environment.

   For more information, go to the *Documentation for IBM FileNet P8 Platform* website and navigate to Developer Help > Content Java API > Security > Working with Security > Creating Cryptographic Keys for Symmetric Encryption > Configuring a Security Provider for a J2EE Application Server Environment.

   To install unlimited strength .jar files:

   a. Obtain the JDK version specific unlimited strength .jar files.

      - Sun JDK - Obtain the Sun unlimited strength policy files from the Sun product web site (http://java.sun.com/j2se/).

      - IBM JDK - Obtain the IBM unlimited jurisdiction policy files from the IBM web site (http://www.ibm.com/developerworks/java/jdk/security).

      CAUTION Make sure you install .jar files specific to the JDK version you are using.

   b. Install the files into the JRE's **/jre/lib/security** folder by replacing files with the same names.

   c. Restart the application server.

2. Start Process Task Manager on Application Engine.

   - Windows: Run the **routercmd.bat** command file, found in the \Router subfolder where you installed the Application Engine software.

   - UNIX: Run the **routercmd.sh** command file, found in the \Router subfolder where you installed the Application Engine software.

3. Select **Component Manager** in the left pane (also referred to as the feature pane).

4. Modify the component properties as appropriate. For details, click the **Help** button and navigate to FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Application Engine > Component Manager > Configure the Component Manager > General properties.

5. Click **Start** on the toolbar.

Specify connection between Process Engine and Component Manager (on Process Engine)

1. On Process Engine, start the Process Task Manager.

   a. Windows: Select **Start > Programs > FileNet P8 Platform > Process Engine > Process Task Manager.**

   b. UNIX: Enter **vwtaskman** from the command prompt.

2. Select **Process Service** in the left pane (also referred to as the feature pane).

3. Select **Server Connections** tab.

4. In the Host field, enter the host name of the Application Engine server where Component Manager is running.

5. In the Event Port field, enter the port that the Component Manager listens to for incoming events.; the default is 32773. The port number you enter must match the number you entered in step 3 of .

Task 25: Install standalone IBM FileNet Enterprise Manager system

NOTES

- Refer to the *IBM FileNet P8 Hardware and Software Requirements* for the list of Windows operating systems on which IBM FileNet Enterprise Manager can be installed.

- The machine must be logged on to by a member of the Windows domain where the domain controller is located.

- The IBM FileNet Enterprise Manager does not require any other supporting Content Engine services or files to be located on the machine.

- To control tracing logging from a machine where a remote (standalone) IBM FileNet Enterprise Manager is installed, you must be logged on as a user who has local administrator rights on a machine where Content Engine is installed. Furthermore, the Remote Registry service must be running on the Content Engine machine.

- When installing Content Engine services (e.g., Object Store Service, File Store Service), or IBM FileNet Enterprise Manager, the machine that you are installing on must be a member of the "deployment" domain (whether that be the parent or child domain) prior to installing.

- You can use IBM FileNet Enterprise Manager to administer multiple object stores in a single FileNet P8 domain. To administer multiple FileNet P8 domains from a single client machine, you must install Terminal Server on at least one machine in each domain. However, the machine cannot have Process Engine installed on it. This machine should have IBM FileNet Enterprise Manager installed and configured for that domain. From your single client machine, you can connect to each machine using Terminal Server and use IBM FileNet Enterprise Manager to administer that specific domain.

To install standalone Enterprise Manager system:

1. Make sure you are logged in with a domain account that has local administrator privileges.

2. Insert the *IBM FileNet P8 Content Engine* CD into the CD drive, navigate to the ContentEngine folder, and click **setup.exe**.

3. Complete the Content Engine Setup wizard screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the Content Engine installation.
License Agreement	Review and accept the license agreement for IBM FileNet P8 software products, and then click **Next**.
Minimum Requirement	This screen appears only if the server where you are installing Content Engine software does not meet the suggested minimum system requirements posted in the FileNet P8 Hardware and Software Requirements on the FileNet Customer Service and Support web site (http://www.css.filenet.com).
	Click **Next** if you wish to proceed with the installation, or click **Cancel** to exit the wizard.
Customer Information	Type your user name (required) and organization (optional), and then click **Next**.

In this screen...	Perform this action...
Setup Type	Click **Custom**, and then click **Next**.
Custom Setup	To install only IBM FileNet Enterprise Manager: a. In the program features list, highlight the Administrative Tools entry, and select from its drop-down list (click the icon to the left of the entry) to install the feature. b. Click **Disk Usage** to confirm that you have enough disk space. c. Highlight, in turn, each of the other items in the program features list, and select from the drop-down list to make the feature not available. d. Accept (or click **Change** to alter) the default Content Engine installation directory. e. Click **Next**.
Install third-party software	If prompted, install required third-party applications (e.g., Apache HTTP Server and MDAC), following all screen prompts. **NOTE** If you don't want to install the required third-party software at this time, but would rather install it yourself manually, click **Cancel** to stop the Content Engine Setup wizard. If prompted to install third-party software, do the following: a. Click **Next**. b. Follow all screen prompts. In most environments, you can accept the default installation values for third-party software unless otherwise noted.

In this screen...	Perform this action...

Ready to Install	Do the following:
	
	  a. If you already have an IBM FileNet P8 Documentation web site installed, you can configure Content Engine components to access it, as follows.
	
	      NOTE If you don't yet have a documentation web site installed, see "Feature component notes" on page 128.
	
	      i. Select the provided check box.
	
	      ii. Type the URL of the web site in the following format:
	
	        http://<*docserver*>:<*port#*>/<*ecm_help*>)
	
	        where:
	
	        docserver is the name of the Java web server
	
	        port# is the port number
	
	        ecm_help is the root folder of the documentation website
	
	        You can use multipart root folders if your application server supports them (e.g., /docs/ecm_help).
	
	      iii. Click **Test** to verify that the documentation URL is correct.
	
	  b. Click **Install** to install Enterprise Manager. (The installation will take several minutes.)

Completing the Content Engine Setup wizard	Click **Finish**. This action completes the installation of Content Engine and opens the GCD wizard to enable you to join an existing FileNet P8 domain. **NOTE** If the GCD wizard does not start automatically, navigate to <*drive*>**\Program Files\FileNet\Content Engine** and double-click **ConfigGCD.exe** to manually start it. Continue at "To join an existing FileNet P8 domain" on page 265

To join an existing FileNet P8 domain

Run the GCD wizard to join to a FileNet P8 domain the IBM FileNet Enterprise Manager you just installed.

In this screen...	Perform this action...
P8 Domain	Type the object store service host name and click **Next** to join a FileNet P8 domain. **NOTE** Content Engine Object Store Service must already be installed on the host you specify.

In this screen...	Perform this action...
Ready to create P8 domain	Verify the FileNet P8 domain name in the Domain Name box, and then click **Finish.** Click **OK** when the wizard announces that the GCD and Content Engine are successfully configured, and you are done.

Reboot the machine, as prompted, if you installed IBM FileNet P8 CFS Server for Image Services.

Task 26: Configure remote Content Engine file stores

NOTES

- When installing Content Engine services (e.g. Object Store Service or File Store Service), or IBM FileNet Enterprise Manager, the machine that you are installing on must be a member of the "deployment" domain (whether that be the parent or child domain) prior to installing.

- File Store Service does not require any other supporting Content Engine services or files to be located on the machine.

- The partition that will contain the shared folder for the remote file store(s) must be Windows DFS or NTFS.

- Before configuring an Oracle-based remote file store, you must already have installed Oracle Client on the remote server.

To install remote IBM FileNet File Store Service on the remote server

1. Make sure you are logged in with a domain account that has local administrator privileges.

2. Insert the *IBM FileNet P8 Content Engine* CD into the CD-ROM drive, navigate to the ContentEngine folder, and click **setup.exe**. The Content Engine Setup wizard opens.

   NOTE You can select the **Back** button at any time during the installation process to make changes to any previous dialog box.

3. Complete the Content Engine Setup wizard screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the Content Engine installation.
License Agreement	Review and accept the license agreement for IBM FileNet P8 software products, and then click **Next**.
Minimum Requirement	This screen appears only if the server where you are installing Content Engine software does not meet the suggested minimum system requirements posted in the *IBM FileNet P8 Hardware and Software Requirements*. Click **Next** if you wish to proceed with the installation, or click **Cancel** to exit the wizard.
Customer Information	Type your user name (required) and organization (optional), and then click **Next**.
Setup Type	Click **Custom**, and then click **Next**.

In this screen...	Perform this action...
Custom Setup	Do the following: a. Set all program features except File Store Service to *not* be available for installation. b. Click **Disk Usage** to confirm that you have sufficient disk space for File Store Service. c. Accept (or click **Change** to alter) the default Content Engine installation directory. d. Click **Next**.
Install third-party software	If prompted, install required third-party applications (e.g., Apache HTTP Server and MDAC), following all screen prompts. **NOTE** If you don't want to install the required third-party software at this time, but would rather install it yourself manually, click **Cancel** to stop the Content Engine Setup wizard. If prompted to install third-party software, do the following: a. Click **Next**. b. Follow all screen prompts. In most environments, you can accept the default installation values for third-party software unless otherwise noted.

In this screen...	Perform this action...
Ready to Install	Do the following:
	a. If you already have an IBM FileNet P8 Documentation web site installed, you can configure Content Engine components to access it, as follows.
	NOTE If you don't yet have a documentation web site installed, see "Feature component notes" on page 113.
	i. Select the provided check box.
	ii. Type the URL of the web site in the following format:
	http://*<docserver>*:*<port#>*/*<ecm_help>*)
	where:
	docserver is the name of the Java web server
	port# is the port number
	ecm_help is the root folder of the documentation website
	You can use multipart root folders if your application server supports them (e.g., /docs/ecm_help).
	iii. Click **Test** to verify that the documentation URL is correct.
	b. Click **Install** to install File Store Service. (The installation will take several minutes.)
Completing the Content Engine Setup wizard	Click **Finish**. This action completes the installation of Content Engine software and opens the GCD wizard to enable you to create a new, or join an existing, FileNet P8 domain.
	NOTE If the GCD wizard does not start automatically, navigate to *<drive>***\Program Files\FileNet\Content Engine** and double-click **ConfigGCD.exe** to manually start it.

To join an existing FileNet P8 domain:

Run the GCD wizard to join the file store to a FileNet P8 domain.

In this screen...	Perform this action...
P8 Domain	Type the object store service host name and click **Next** to join a FileNet P8 domain.
	NOTE Content Engine Object Store Service must already be installed on the host you specify.

In this screen...	Perform this action...
Join Domain	If the domain name shown on the Join Domain wizard screen is blank or does not match the FileNet P8 domain you would like to join, go back to the previous P8 Domain screen and enter the name of a different (existing) Content Engine server that contains an Object Store Service and is in the FileNet P8 domain you want to join.

Assuming you entered a valid Content Engine server name on the previous P8 Domain screen and experienced no interceding error message, do the following:

    a. Verify that the default Windows Service Logon account shown is the one you want.

    b. Type a Password value for the account shown.

Click **Finish**. Content Engine joins the FileNet P8 domain. Click **OK** when the wizard announces that the GCD and Content Engine are successfully configured, and you are done.

You can confirm that the Content Engine File Store Service is installed and started by finding the entry for it in the Windows Services panel.

If, for some reason, you chose to continue to this screen after entering a not (yet) recognized Content Engine server name on the previous P8 Domain screen, you will have to manually enter values in the following fields and then click **Finish** to complete this procedure.

SYSINIT Path

The path to the **sysinit.dat** file on a server that hosts a Content Engine Object Store Service and is in the FileNet P8 domain you want this new Content Engine server to join. If the field is blank, specify the value as in the following example (where the server hosting the Object Store Service is named CEServer1):

\\CESERVER1\FNCE_CESERVER1$\sysinit.dat

P8 Domain Service Group

The name of a group with permission to add a computer to a FileNet P8 domain. Example: Content Engine Servers. If this field is blank, you must enter the same name you specified when creating the FileNet P8 domain on the master GCD server. Also, if the group is a Windows domain local group or a universal group, its members must also be in the Windows deployment domain (i.e., containing the Content Engine servers).

In this screen...	Perform this action...
	Use Default accounts
	For this check box, do one of the following:
	• Leave it selected to accept the default account information for the Windows Service Logon account shown.
	• Clear it if you want to choose an account for Content Engine Service logon from the Members list. Then click **List Members** and select one of the accounts to display it as the new Windows Service Logon account.
	If you choose default users, you will have to re-specify their existing passwords. If you choose non-default users, you are free to specify each password.
	Password
	You must supply a valid password for the Windows Service Logon account. If the account (e.g., FNCE_*machinename*) already exists, the new password will overwrite the existing password for the account.
	NOTE To verify installation, you can find Content Engine installation logs in **\winnt\temp** (on Windows 2000) or **\Windows\temp** (on Windows 2003).

To create the shared folder for remote file store use

This procedure creates a shared folder and sets the security on that folder.

1. Using either Windows Explorer or My Computer, navigate to the drive/folder where you would like to create the shared folder for the file store to be stored.

   NOTE This shared folder will be the file store repository root folder for all data that will be stored in the object stores using the remote file store.

2. Create the new folder to be used for the remote file stores and remote object stores.

3. Right-click the new folder and select Sharing (Windows 2000) or Sharing and Security (Windows 2003).

4. Click **Share this folder** and specify a share name.

5. Click **Permissions**. Give Authenticated Users group Full Control.

6. Click **OK** and then close the application.

To create a remote file store

This procedure is performed from a machine that has the IBM FileNet Enterprise Manager installed.

1. Launch the IBM FileNet Enterprise Manager and log on.

2. Within the Servers folder (in the tree view of IBM FileNet Enterprise Manager) under the icon of the server where you want to create the new file store, right-click the File Stores folder and select **New File Store**.

3. Work through the Create a File Store wizard screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the file store creation.
Specify an Object Store	Select from the list the object store to which you will assign the file store and then click **Next**.
Name and Describe the File Store	Type the name and description of the file store. The name must be unique within the specified object store. Then click **Next**.
Specify File Store Folder	Click **Remote Server** and then do the following: a. In the Remote Server box, type the UNC (e.g., \\YOUR_REMOTE_SERVER\remote_file_store1) of the shared folder you created in "To create the shared folder for remote file store use" on page 271. Alternatively, if you have mapped a drive to the shared folder, you can click **Browse** or select the shared folder from the Remote Server drop-down list. b. In the File Store Folder box, accept or change the name the wizard assigns to the file store folder. c. In the File Store Service box, accept or change the (default) name of the server hosting the File Store Service that will govern the remote file store. NOTE You should always use the File Store Service on the server where the remote file store resides. d. Click **Next**.

In this screen...	Perform this action...
Fixed File Store	4. Do the following:
	a. If you intend to use a fixed content device for your file stores, select the Fixed File Store check box and continue at Step b. Otherwise, clear the check box and skip to Step h.
	b. Select a fixed content device from the selection list.
	NOTES
	• Hitachi Data Systems and IBM TSM/DR550 (Tivoli Storage Manager) will appear in the selection list only if you have already installed Content Engine 3.5.1 Service Pack. See ""Install Service Packs and patches for core components" on page 236.
	• Hitachi fixed content devices used for file stores must reside in the same Active Directory domain as the Content Engine servers.
	• See the *IBM FileNet P8 Platform Release Notes* for the latest information on FileNet certification of IBM TSM/DR550 as a fixed content device.
	c. If you selected IBM FileNet Image Services, then IBM FileNet Enterprise Manager displays the Default IS Document Class group box, including the default document class of the selected fixed content device.
	d. If you selected a Centera or SnapLock fixed content device, IBM FileNet Enterprise Manager also displays retention information from which you can select a retention period.
	e. (Optional) Clear the Create Referral File check box, and IBM FileNet Enterprise Manager will warn that full text indexing won't be available for the new file store. (A referral file is used to reindex content stored in a fixed file store.)
	f. (Optional) Click **Selected below** in the Default IS Document Class group box to override the default document class of the fixed content device. IBM FileNet Enterprise Manager then enables a selection list in the lower part of the group box and fills it with available IS document classes.
	g. (Optional) If you clicked **Selected below** in Step f, you can choose an alternate default IS document class from the selection list.
	h. Click **Next**.
Completing the Create a File Store Wizard	Click **Finish**. When the confirmation message shows that the file store has been successfully created, click **OK**.

Using IBM FileNet Enterprise Manager to display file store status

The Windows user who logged on to IBM FileNet Enterprise Manager as an IBM FileNet P8 user and then created a file store will see the status of the file store as online, and will be able to add content to it. All other Windows users, even if logged on to IBM FileNet Enterprise Manager as the same IBM FileNet P8 user who created the file store, will see its status as offline, and thus will not be able to add content to it.

To enable a Windows logon user to see an online status for a file store and to add content to it, you must add the user to the directory security of the file store with the following permissions: Modify, Read & Execute, List Folder Contents, Read, and Write. Alternatively, as a member of the Local Administrators group you can add the Windows logon user to the *<DOMAIN>*\Content Engine Servers group.

Task 27: Install Application Integration

Install Application Integration if you want to integrate IBM FileNet Workplace with your Microsoft Office applications and Outlook. Complete the following procedure on each machine that will use Workplace Application Integration.

NOTES

- You cannot collocate Workplace Application Integration with clients running IDM Desktop Application Integration.

- The Application Integration software includes the Workplace File Tracker software. If you install Application Integration, do not install File Tracker on the same system.

To install the Application Integration software

1. Verify your computer meets the platform requirements documented in the *IBM FileNet P8 Hardware and Software Requirements*.

2. Log onto the machine with an account that has Administrator privileges.

3. In Workplace, navigate to the Author page, **General Tools** view.

4. Scroll down and click **Download Office Integration** and do one of the following:

   - Click **Open** to run the program from its current location.

   - Click **Save**. In the Save As dialog box, find a location on your machine in which to download and save the ApplicationIntegration.exe file locally, and then click **Save**. Once the file is saved to your hard drive, double-click the file to run the installer.

   The Welcome Wizard dialog box for Application Integration appears. Another Welcome dialog box appears.

5. Click **Next**.

   NOTE If you have Workplace Application Integration 2.0.1 currently installed, it is completely removed and replaced by the 3.5.0 version and a warning is displayed.

   If you have Workplace Application Integration 3.0.0 currently installed, you are prompted about the impending upgrade.

   Click **Yes** to upgrade to the current version you are installing or click **No** to end the installation.

6. Read the license agreement, and then select **I accept the terms to the license agreement**, and then click **Next**. If you do not accept the license agreement, you cannot continue with the install.

7. Do the following:

   - Select the applications you want to integrate, and then click **Next**.

     NOTE The Application Integration Toolkit Components option is required to use Application Integration.

   - Under **Install to**, the default installation path is displayed. Click **Change** to specify a different location on the Change Current Destination Folder dialog box, and then click **OK**. Click **Next**.

     NOTE You may see two default installation paths - one for Microsoft Office and Outlook, and another for the Toolkit Components. The Toolkit Components path only appears when the system

on which you are installing Application Integration has the Toolkit Components currently installed. You cannot modify the Toolkit Components installation path.

8. Enter the server name, port number and application name that defines the Workplace address. The *server name* is the name of the web server running Workplace, *port number* is the web server's assigned port, *application* is the directory where you installed the IBM FileNet Workplace application files.

    Check **Server uses secure connection (SSL)** if you are running full SSL to encrypt all communication with Workplace.

    NOTE You can also leave these fields blank and enter the information when you log on to Workplace Application Integration.

9. Click **Next**.

10. Click **Install**.

11. After the install is complete, click **Finish** to complete the setup process.

To verify your Workplace Application Integration installation

1. Start Microsoft Word.

2. From the **File** menu, click **FileNet P8**, point to **Open Document**, and then select **Select Item**. The Logon dialog box opens.

3. Log on using any valid domain account. The available object stores in your environment are displayed.

    NOTE If you didn't enter the Workplace Address information in Step 8 above, enter the server name, port number and application name that defines the Workplace address. The *server name* is the name of the web server running Workplace, *port number* is the web server's assigned port, *application* is the directory where you installed the IBM FileNet Workplace application files. Check **Server uses secure connection (SSL)** if you use a full SSL to encrypt all communication with Workplace. Do not select this option if you use a SSL redirect during login.

4. Close all dialog boxes and close Microsoft Word.

To uninstall or modify Workplace Application Integration

1. From the **Start** menu, click **Settings**, and then point to **Control Panel**.

2. Click **Add/Remove Programs**, and then highlight **FileNet Workplace Application Integration 3.5.0**.

3. Do one of the following:

    *   Click **Remove**, and then click **Yes** to confirm you want to uninstall Workplace Application Integration.

    *   Click **Change** to access maintenance tasks, and then click **Next**. You can modify, repair, or remove Application Integration using the maintenance tasks.

        –   Do one of the following:

            *   Select **Modify** to add or remove integration with Microsoft applications from your previous install. For example, if you have both Microsoft Office and Outlook installed, you can remove one of the applications using this option. The Custom Setup dialog box appears, where you highlight the option you want to add or remove. Click **Next**, and then click **Install**. Click **Finish** to complete the process.

- Select **Repair** to re-install Workplace Application Integration to repair installation errors, and then click **Next**. Click **Install** to start the repair process. Click **Finish** to complete the process.

- Select **Remove** to remove Workplace Application Integration from your system, and then click **Next**. Click **Remove**. Once the application is removed from your system, click **Finish** to complete the process.

Task 28: Install File Tracker

Install File Tracker if you want to use the Workplace file tracking feature. Complete the following procedure on each machine that will use Workplace File Tracker.

NOTE If you have already installed Application Integration 3.5.1 hotfix pack 2 or later, then the File Tracker feature has already been installed. Do not perform this procedure if you already installed this version of Application Integration. If a previous version of Application Integration is installed, upgrade it to 3.5.1 hotfix pack 2 or a subsequent hotfix pack, and this will include the File Tracker installation. For details about the upgrade process, see "Upgrade Application Integration" on page 337.

To install the File Tracker software

1. Verify your computer meets the platform requirements documented in the *IBM FileNet P8 Hardware and Software Requirements*.

2. Log onto the machine with an account that has Administrator privileges.

3. In Workplace, navigate to the Author page, **General Tools** view.

4. Scroll down and click **Download File Tracker** and do one of the following:

   • Click **Open** to run the program from its current location.

   • Click **Save**. In the Save As dialog box, find a location on your machine in which to download and save the FileTracker.exe file locally, and then click **Save**. Once the file is saved to your hard drive, double-click the file to run the installer.

   The Welcome Wizard dialog box for File Tracker appears. Another Welcome dialog box appears.

5. Click **Next**.

6. Read the license agreement, and then select **I accept the terms to the license agreement**, and then click **Next**. If you do not accept the license agreement, you cannot continue with the install.

7. Do one of the following:

   • Click **Change** if you want to install File Tracker to a different location. Specify the location to which you want to install File Tracker, and then click **OK**. Click **Next**.

   • Click **Next** to accept the default location.

8. Click **Install**.

9. After the install is complete, click **Finish** to complete the setup process.

To uninstall Workplace File Tracker

1. From the **Start** menu, click **Settings**, and then point to **Control Panel**.

2. Click **Add/Remove Programs**, and then highlight **FileNet Workplace File Tracker**.

3. Click **Remove**, and then click **Yes** to confirm you want to uninstall Workplace File Tracker.

Task 29: Enable Rules Engine integration

If you elected to configure the Rules Engine interface when prompted during Process Engine Setup, you must complete the following tasks to enable Rules Engine integration:

1. enabling the Rules Engine interface in the Process Task Manager and Process Configuration console

2. configuring the JRules startup file

Instructions for each of these tasks appear below.

If you did not configure Rules Engine integration during Process Engine Setup, complete "Enable Rules Engine integration manually" on page 281 rather than this task.

NOTES

*   Before beginning this task, ensure that ILOG JRules is installed on Process Engine along with a version of the Java Runtime Engine (JRE) that is supported by JRules.

*   In order to create and run business rules for Process workflows, ILOG JRules must be started from the command prompt using a custom startup file (runilog.bat on Windows or runilog on UNIX) provided by IBM FileNet. Before using this file, you must update the file with the location of ILOG JRules and the JRE that JRules uses. Failure to update and use the startup file will result in workflows that do not execute as expected or runtime errors.

To enable the Rules Engine interface

1. Start Process Task Manager on Process Engine.

    a. Windows: Select **Start > FileNet P8 Platform > Process Engine > Process Task Manager**.

    b. Solaris: Enter **vwtaskman** from the command prompt.

2. Select **Process Service** in the left pane (also referred to as the feature pane). If the Process Service is running, right-click on **Process Service** and select **Stop** from the context menu.

3. Click the **Server Connections** tab and modify the Rules Engine fields as appropriate. For details, click **Help** and navigate to FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Process Engine > Process Service > Configure the Process Service > Server connections.

4. Restart the Process Service by right-clicking on **Process Service** and select **Start** from the context menu.

5. Select **Rules Engine** in the feature pane.

6. Modify the Rules Engine properties as appropriate. For details, click **Help** and navigate to FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Process Engine > Rules Engine.

7. Click **Start** on the toolbar.

8. In Workplace, click **Admin** and then click **Process Configuration Console**.

9. In the left pane (also referred to as the scope pane), locate the Process Engine installation for which you want to enable Rules Engine integration and right-click one of the routers located under that Process Engine.

10. Select **Connect** from the context menu.

11. In the scope pane, right-click on the appropriate Process Engine and select **Properties** from the context menu.

12. Select the **Runtime Options** tab.

13. Select the **Enable Rules** check box and click **OK**.

14. Select **File > Exit** from the Process Configuration Console menu and then close the window.

15. Start the Process Task Manager and restart (stop and start) the Process Service.

To configure the JRules startup file

1. Change permission for the startup file (runilog.bat on Windows or runilog on UNIX) to writable. The default location of the startup file is:

> (Windows) \fnsw_loc\connectors\ILOG\runilog.bat
> (UNIX) /fnsw/local/connectors/ILOG/runilog

2. Edit the startup file and update the path information in the JDKHOME, ILRHOME, FNJARDIR entries as appropriate for your system.

   - JDKHOME indicates the location of the JRE that ILOG will use to run JRules.

   - ILRHOME indicates the location of JRules.

   - FNJARDIR indicates the location of the Rules Engine program files and folders.

   For example:

   (Windows)

   > JDKHOME=C:\Program Files\Java*<supported version of JRE>*
   > ILRHOME=D:\ILOG\JRules40
   > FNJARDIR=E:\fnsw_loc\connectors\ILOG

   (UNIX)

   > JDKHOME=/usr/j2re1.4.0_04
   > ILRHOME=/opt/ILOG/JRules40
   > FNJARDIR=/fnsw/local/connectors/ILOG

3. Save the modified file.

Task 30: Enable Rules Engine integration manually

If you elected not to configure the Rules Engine interface when installing Process Engine, you can manually enable the Rules Engine integration (reinstalling Process Engine is not necessary). Regardless of your selections during Process Engine installation, Process Engine Setup copies the Rules Engine program files and folders to <install drive>:\fnsw_loc\connectors\ILOG\ (Windows) or /fnsw/local/ connectors/ILOG (UNIX).

To manually enable Rules Engine, you must:

1. Edit the **taskman.properties** file and the **fnrules.properties** file.

2. (UNIX only) Assign ownership of /fnsw/local/connectors and its subdirectories to the **fnsw** user. At the command prompt, execute the following command:

    chown -R fnsw:fnusr/fnsw/local/connectors

3. Enable the Rules Engine interface in the Process Task Manager and Process Configuration console.

4. Configure the JRules startup file.

Instructions for each of these tasks appear below.

If you configured Rules Engine integration during Process Engine Setup, complete rather than this task.

NOTES

- Before beginning this task, ensure that ILOG JRules is installed on Process Engine along with a version of the Java Runtime Engine (JRE) that is supported by JRules.

- In order to create business rules for Process workflows, ILOG JRules must be started from the command prompt using a custom startup file (runilog.bat on Windows or runilog on UNIX) provided by IBM FileNet. Before using this file, you must update the file with the location of ILOG JRules and the JRE that JRules uses. On UNIX systems you must also update the startup file to indicate the location of the JRE. Failure to update and use the startup file will result in workflows that do not execute as expected or runtime errors.

To edit the taskman.properties and fnrules.properties files

1. On Process Engine, open the taskman.properties file in a text editor and add the following lines. The taskman.properties file is located in /fnsw/bin (UNIX) or <install drive>:\fnsw\bin (Windows).

    TaskManager.RulesEngine.ClassPath=<*connector_home*>\\resources;<*connector_home*>\\re.jar;
    <*connector_home*>\\peResources.jar;<*connector_home*>\\ri.jar;<*jrules_home*>\\lib\\jrulesall.jar;<*jrules_home*>\\lib\\xercesImpl.jar;
    <*jrules_home*>\\lib\\logging.jar;<*jrules_home*>\\lib\\sax.jar;<*jrules_home*>\\lib\\dom.jar;
    <*jrules_home*>\\lib\\jmi.jar;<*jrules_home*>\\lib\\xalan.jar;<*jrules_home*>\\lib\\jviews.jar;
    <*jrules_home*>\\lib\\sam.jar;<*jrules_home*>\\lib\\sdm.jar

    TaskManager.RulesEngine.Props=<*connector_home*>\\fnrules.properties

    TaskManager.RulesEngine=true

    TaskManager.RulesEngine.VMArgs=-Xms256m -Xmx256m

    where:

    <*jrules_home*> is the location where JRules is installed. The default location in Windows is <install drive>:\ilog\jrules46. The default location in UNIX is /ilog/jrules46.

<connector_home> is the location where the Rules Engine is installed. The default location in Windows is <install drive>:\FNSW_LOC\connectors\ILOG\. The default location in UNIX is /fnsw/local/connectors/ILOG.

NOTE When entering the TaskManager.RulesEngine.ClassPath and TaskManager.RulesEngine.Props statements on UNIX, replace the semicolons shown in the above example (;) with colons (:).

2. Save and close the file.

3. Open the fnrules.properties file in a text editor and edit the following lines. The fnrules.properties file is located in /fnsw/local/connectors/ILOG (UNIX) or <install drive>:/fnsw_loc/connectors/ILOG (Windows).

    JRULES_CONNECTOR.HOME = *<connector_home>*

    JRULES_CONNECTOR.REPOSITORY_HOME = *<connector_home>*/repositories

    JRULES_CONNECTOR.RULES_HOME = *<connector_home>*/rules

4. Save and close the file.

To enable the Rules Engine interface

1. Start Process Task Manager on Process Engine.

    a. Windows: Select **Start > FileNet P8 Platform > Process Engine > Process Task Manager**.

    b. UNIX: Enter **vwtaskman** from the command prompt.

2. Select **Process Service** in the left pane (also referred to as the feature pane). If the Process Service is running, right-click on **Process Service** and select **Stop** from the context menu.

3. Select the **Server Connections** tab and modify the Rules Engine fields as appropriate. For details, click **Help** and navigate to FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Process Engine > Process Service > Configure the Process Service > Server connections.

4. Restart the Process Service by right-clicking on **Process Service** and select **Start** from the context menu.

5. Select **Rules Engine** in the feature pane.

6. Modify the Rules Engine properties as appropriate. For details, click **Help** and navigate to FileNet P8 Administration > Enterprise-wide Administration > Process Task Manager > Process Engine > Rules Engine.

7. Click **Start** on the toolbar.

8. In Workplace, click **Admin** and then click **Process Configuration Console**.

9. In the left pane (also referred to as the scope pane), locate the Process Engine installation for which you want to enable Rules Engine integration and right-click one of the routers located under that Process Engine.

10. Select **Connect** from the context menu.

11. In the scope pane, right-click on the appropriate Process Engine and select **Properties** from the context menu.

12. Select the **Runtime Options** tab.

13. Select the **Enable Rules** check box and click **OK**.

14. Select **File > Exit** from the Process Configuration Console menu and then close the window.

15. Start the Process Task Manager and restart (stop and start) the appropriate Process Service.

To configure the JRules startup file

1. Change permission for the startup file (runilog.bat on Windows or runilog on UNIX) to writable. The default location of the startup file is:

   (Windows) <install drive>:\fnsw_loc\connectors\ILOG\runilog.bat
   (UNIX) /fnsw/local/connectors/ILOG/runilog

2. Edit the startup file and update the path information in the following variables.

   Windows

   - ILRHOME indicates the location of JRules.

   - CONNECTOR_HOME indicates the location of the Rules Engine program files and folders.

   UNIX

   - JDKHOME indicates the location of the JRE that ILOG will use to run JRules.

   - ILRHOME indicates the location of JRules.

   - FNJARDIR indicates the location of the Rules Engine program files and folders.

   For example:

   Windows

   ILRHOME=D:\ILOG\JRules46
   CONNECTOR_HOME=E:\fnsw_loc\connectors\ILOG

   UNIX

   JDKHOME=/usr/j2re1.4.0_04
   ILRHOME=/opt/ILOG/JRules46
   FNJARDIR=/fnsw/local/connectors/ILOG

3. Save the modified file.

4. (Windows only) Ensure that the location of the JRE is set in your PATH system environment variable.

Task 31: Deploy multiple Application Engine instances

This topic covers deployment of multiple instances of the Application Engine on a single application server. Each deployment of the Application Engine must use the same Content Engine, Process Engine, and router. Each deployment of the Application Engine may use different Site Preference settings and may provide access to different object stores.

NOTES

- The procedure below assumes that you have already installed Application Engine and deployed one instance of Workplace. You may or may not have signed in and configured your bootstrap preferences.

- For more information on how to deploy and manage multiple identical applications, see your application server documentation.

To deploy a second instance of the Workplace application

1. (WebLogic, JBoss/Tomcat only) Copy the installed Workplace folder.

   On the Application Engine server, make a copy (*<Workplace_copy>*) of the installed Workplace folder found in:

   > *<AE_install_path>*/**FileNet/**

   NOTES

   - The new application will deploy using the name you give the copy of the Workplace folder (*<Workplace_copy>*).

   - For JBoss/Tomcat you will copy the Workplace folder as part of the deployment. See below.

   - For WebSphere, Oracle, and Sun Java, you will deploy the installed .war file under a new name.

2. (WebLogic only) Clean up the bootstrap.properties file.

   NOTE If you haven't yet signed in to Workplace as part of you first Application Engine installation there is no need to clean up the file.

   When you first sign in to Workplace certain values in the bootstrap.properties file, such as the name and location of the site preferences file, are set. To use different settings for your new Workplace application you must remove the existing entries from the copied file.

   The bootstrap.properties file is located in:

   > *<Workplace_copy>*/**WEB-INF/**

   Edit the bootstrap.properties file:

   - Remove the value entered for the `prefName` setting - This entry contains the name of the site preferences file stored on the object store.

   - Remove the value entered for the `objectStoreId` - This entry contains the object store name where your site preferences will be stored.

   - Remove or edit any of the other values as needed.

3. (Optional, WebLogic only) Clean up other relevant configuration files.

   Some of the installed configuration files contain data that you might want to change:

   - WcmApiConfig.properties

  i.   CredentialsProtection – Clear or Symmetric

  ii. CryptoKeyFile – Path to the CryptoKeyFile.properties file.

  iii. CredentialsProtection/UserToken – Clear or Symmetric

  iv. CryptoKeyFile/UserToken – Path to the UTCryptoKeyFile.properties file.

- Web.xml – Remove any comments and custom changes that should not apply to the second Workplace instance.

- Actions.xml – Remove any comments and custom changes that should not apply to the second Workplace instance.

4. Deploy the second Workplace instance.

   Follow the application server specific procedures below to deploy your second instance of Workplace using a unique name (***<Workplace2>*** in the procedure below).

   When deploying the second instance, use the copied Workplace location/copied app_engine.war file to deploy the application:

   - WebLogic:

     <Workplace_copy>

   - WebSphere/Oracle/Sun Java:

     ***<Workplace>*/app_engine.war**

   - JBoss/Tomcat:

     The deployment instructions will instruct you how to copy the installed Workplace folder as part of deploying the application. Give the new folder a name other than Workplace, ***<Workplace_copy>***.

   To deploy the second Workplace instance

   - WebSphere - See "Configure and start Application Engine (WebSphere)" on page 213.

     CAUTION Deploy the war file with a different Context Root name, ***<Workplace_copy>***.

   - WebLogic - See "Configure and start Application Engine (WebLogic)" on page 220.

     CAUTION The new application will deploy using the name you give the copy of the Workplace folder (***<Workplace_copy>***).

   - JBoss/Tomcat - See "Configure and start Application Engine (JBoss/Tomcat)" on page 223.

     CAUTION The new application will deploy using the name you give the copy of the Workplace folder (***<Workplace_copy>***).

   - Oracle - See "Configure and start Application Engine (Oracle Application Server)" on page 228.

     CAUTION Deploy the war file with a different Application Name and Map to URL, ***<Workplace_copy>***.

   - Sun Java - See "Configure and start Application Engine (Sun Java Application Server)" on page 231.

     CAUTION Deploy the war file with a different Application Name and Context Root, ***<Workplace_copy>***.

5. Sign in and set bootstrap preferences for the new application.

Use the following URL when signing it to set the bootstrap preferences for your new Workplace instance.

```
http://<ApplicationEngineServerName>:<port#>/<Workplace_copy>
```

Task 32: Enable Application Engine to use ISRA

Image Services Resource Adapter (ISRA) is a J2EE connector to the FileNet Image Services (IS) libraries. Using ISRA, Workplace users can view IS documents and their associated annotations in the FileNet P8 Image Viewer and, if they have the appropriate permissions, update the annotations.

To enable Workplace users to view documents using ISRA, the following steps must be completed:

• Install the Application Engine.

• Install FileNet ISRA.

> For information on installing, configuring and deploying FileNet ISRA, refer to the Image Services Resource Adapter documentation on the FileNet ISRA Installation CD.

> **TIP** Use the Sample Application shipped with FileNet ISRA to confirm that the ISRA installation was successful.

> **WARNING** In an ISRA upgrade situation, take care to use the same library name (JNDI connection factory name) that has been previously set in the ISRA install. Changing this variable can cause conflicts when accessing documents.

• Install the Application Engine ISRA Servlet. This servlet is being introduced for the first time in P8 3.5.0.

  – The servlet must be deployed on the same application server as FileNet ISRA.

  – The servlet does not need to be collocated with the Application Engine.

  – ISRA has to be installed and deployed before you install and deploy the ISRA Servlet.

• Configure Workplace Site Preferences.

ISRA SSL support

The following table details the supported for SSL configurations.

SSL Configuration	SSL Support
ISRA Servlet and AE Collocated. AE configured for SSL logon redirect to a non-local host.	Supported
ISRA Servlet and AE Collocated. AE Configured for SSL logon redirect to a local host.	Supported
ISRA Servlet and AE Collocated. AE, and ISRA Servlet running under SSL.	Not Supported
ISRA Servlet remote from AE. AE configured for SSL logon redirect to a non-local host.	Supported
ISRA Servlet remote from AE. AE configured for SSL logon redirect to a local host.	Supported
ISRA Servlet remote from AE. AE running under SSL, ISRA Servlet not running under SSL.	Supported

SSL Configuration	SSL Support
ISRA Servlet remote from AE. AE, and ISRA Servlet running under SSL.	Not Supported

To install and deploy the Application Engine ISRA Servlet

The FileNet P8 Application Engine installation CDs contain the ISRA servlet installation programs for the supported P8 AE platforms.

1. Log on to the application server.

    UNIX - logon as a user with write access to the **/bin** directory and read, write, execute access to the directory where you plan to install ISRA Servlet.

    Windows - logon as a member of the local Administrators group or as a user with equivalent permissions.

2. Stop the application server if it is running.

3. Start the Application Engine ISRA Servlet Setup wizard:

    UNIX - Insert and mount the Application Engine CD. Navigate to /<mount_point>/ and execute **<Platform>filenet_ae_israservlet_setup.bin**.

    Windows - Insert the Application Engine CD. Navigate to CD drive and execute **WINfilenet_ae_israservlet_setup.exe**

4. Complete the Setup screens as follows:

In this screen...	Perform this action...
License Agreement	Review and accept the license agreement for FileNet P8 software, then click **Next**.

Directory Name	For the Directory Name field, enter or browse to the location where you want to install the ISRA Servlet, or accept the default location:
	
	• UNIX - /opt
	
	• Windows - C:\Program Files\
	
	Click **Next**
	
	UNIX
	
	`<AE_israservlet_install_path>/FileNet/ ApplicationEngineISRAServlet>`
	
	Windows
	
	`<AE_israservlet_install_path>\FileNet\ApplicationEngineI SRAServlet>`

In this screen...	Perform this action...
Create war File	Check this box if you use a WebSphere application server. If the box is checked, the installation program will create the ae_isra.war file and a script that can also generate the ae_isra.war file.
User Token Security	Make a note of the user token crypto key path. Click **Next**.
Ready to Install	Verify your selections, and click **Next** to install the ISRA Servlet.
Completing the Setup	Click **Finish** to complete the ISRA Servlet installation Wizard.

5. Check the file **filenet_ApplicationEngineISRAServlet_install_log.txt**, located in the **<AE_israservlet_install path>\FileNet** directory, to see if any errors occurred during the installation.

6. Install unlimited strength .jar files.

   Perform this step only if you selected the **Create unlimited strength key** option in the Application Engine User Token Security step of the Application Engine installation and the Application Engine ISRA Servlet is deployed on a different application server from the Application Engine. Failure to perform the step causes an EncryptionException when you login to the IS Server.

   For more information, refer to the section "Install unlimited strength .jar files" in "Configure symmetric encryption" Task 20 on page 245 in the Application Engine Install Guide.

7. Start the application server.

8. Deploying the Application Engine ISRA Servlet is similar to deploying Workplace.

   • WebSphere:

     Deploy <AE_israservlet_install_path>\FileNet\ApplicationEngineISRAServlet\ae_isra.war file in the same way you deployed the app_engine.war file for Workplace.

   • WebLogic

     Deploy <AE_israservlet_install_path>\FileNet\ApplicationEngineISRAServlet in the same way you deployed <AE_install_path>\FileNet\Workplace.

   • JBoss:

     Copy <AE_israservlet_install_path>\FileNet ApplicationEngineISRAServlet\ directory to <JBOSS_HOME>\server\default\deploy\ directory and rename it to ApplicationEngineISRAServlet.war.

9. Stop and restart the application server.

10. Verify the Application Engine ISRA Servlet installation.

    A diagnostic tool is available to verify that the ISRA Servlet is installed and deployed correctly.

    a. Launch your browser.

    b. Enter the URL for the Application Engine ISRA Servlet, for example,

       http://<ApplicationEngineISRAServlet servername>:<port>/ApplicationEngineISRAServlet/ISRA

NOTE ApplicationEngineISRAServlet is the default context root. If you specified a different name for the context root when deploying the Application Engine ISRA Servlet, change the URL to match your configuration.

If the ISRA Servlet is installed and deployed correctly, a Congratulations message displays. For example:

```
Congratulations! ISRA Interface Servlet is configured at this URL.

WcmApiConfigFile = D:\ISRAInterface\jsp\WEB-INF\WcmApiConfig.properties

WcmApiConfig file exists


CryptoKeyFile/UserToken = C:\Program
Files\FileNet\Authentication\UTCryptoKeyFile.properties

CryptoKeyFile/UserToken exists


FileNet ISRA classes are in the classpath

com.filenet.is.ra.cci.FN_IS_CciConnectionSpec
```

To configure the Workplace site preferences

The Application Engine setup installs a pre-configured external service called Image Service, which includes the parameterized values necessary to access FileNet IS libraries from Workplace. Enable the service by setting the *Image Service* value in Site Preferences to **Show** (the default is Hide), as described in the following procedure.

To enable the pre-configured Image Service

1. Sign in to Workplace as a user having the Application Engine Administrators access role.

2. Launch Site Preferences as follows:

   a. Select **Admin**.

   b. Select **Site Preferences**.

3. Select **External Services** from the left options list.

4. Select **Modify** for the **Image Service** (under External Reference Services).

   The External Reference Service Settings site preference page displays.

5. Under General Information, locate *Show on Select File page* and change the value to **Show**.

6. Click **Accept**.

7. Click **Apply**.

To set the ISRA Interface Servlet URL

1. Select **Bootstrap**.

2. Under Preferences Settings, set the value of ISRA Interface Servlet URL. For example:

   ```
   http://<servername>:<port>/ApplicationEngineISRAServlet/ISRA
   ```

> **NOTE** ApplicationEngineISRAServlet is the default context root. If you specified a different name for the context root when deploying the Application Engine ISRA Servlet, change the URL to match your configuration.

3. Click **Apply.**

4. Click **Exit** to exit the Site Preferences.

To log on to Image Services via LDAP

To log on to the Image Services library using your LDAP account, configure ISRA and Image Services for LDAP authentication. If the LDAP account with which you accessed Workplace is not valid for the Image Services library, or if LDAP authentication is not configured, you will be prompted to log on to the Image Services library.

For information on configuring LDAP authentication for ISRA, refer to the ISRA Installation and Deployment Guide. For information on configuring LDAP authentication for Image Services, refer to the Image Services System Tools Reference Manual.

To access IS library documents

For informations about accessing IS library documents, see **Workplace > Workplace User Help > Manage documents > Add a document**.

Task 33: Install and Configure Web Services Integration

The necessary software required for Web Services integration with Content Engine and Process Engine is installed by default when you install Content Engine.

However, you must perform related configuration procedures to enable Web Services integration with Content Engine and Process Engine.

Refer to the following IBM FileNet P8 Documentation locations for instructions on how to enable the associated Web Services components:

Content Engine

FileNet P8 Documentation > Developer Help > Content Web Services > Enabling Content Engine Web Services

Process Engine

FileNet P8 Documentation > Developer Help > Process Development > Web Services Administration

Task 34: Install and Configure IBM FileNet System Manager

The necessary software required for the System Manager performance monitoring component for Content Engine is installed by default when you install Content Engine. However, you must manually install the comparable software for Process Engine.

In both cases, you must also perform related configuration procedures to enable System Manager.

Refer to the following IBM FileNet P8 Documentation location for instructions on how to enable the associated System Manager components:

FileNet P8 Documentation > FileNet P8 Administration > Enterprise-wide Administration > System Manager

Task 35: Install patches for optional components

Install any patches or *SS fixes required for the IBM FileNet P8 Platform. To determine whether additional patches or *SS fixes are needed, see "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

Upgrade Planning and Procedures

This upgrade section contains the following major topics:

Plan the Upgrade

This section includes the following topics:

Upgrade Overview

This section lists details that will help you prepare your environment for the upgrade of an IBM FileNet P8 system. In many cases, the items you see listed will be links to more detailed information, which will help you plan a system upgrade. Please review this information thoroughly before you start to upgrade IBM FileNet P8 components or required third-party software.

NOTES

*   The *IBM FileNet P8 Platform Installation and Upgrade Guide* is intended for use by a FileNet Certified Professional (FCP) Technician or a Certified Technical Service Provider (TSP). To learn more about the FCP Certification program, please contact your IBM services representative.

*   This guide does *not* address migrations to different operating systems, databases, or directory services. To migrate from one platform to another (for example, from MS SQL Server database engine to Oracle), you must contact your IBM FileNet representative to arrange a possible IBM FileNet Professional Services engagement. The upgrades described in the guide assume that you will:

    –   retain your basic platform configuration from the previous release.

    –   make no changes to user or group definitions during the upgrade.

    –   apply only the necessary supported software updates and patches, as noted in this guide and in the *IBM FileNet P8 Hardware and Software Requirements* document.

If you are running FileNet P8 3.0.0, you must first upgrade to 3.5.0 before applying the 3.5.*x* Service Pack. Before proceeding with the upgrade procedure, verify that the following conditions have been met:

*   An existing IBM FileNet P8 3.0.0 system is installed and configured. You cannot upgrade directly to IBM FileNet P8 Platform 3.5.*x* from any version prior to 3.0.0.

*   Your IBM FileNet P8 3.0.0 system does not include any of the following functional expansion add-on components. These components have not yet been released for this version of IBM FileNet P8 Platform.

    –   Records Manager (RM)

    –   Team Collaboration Manager (TCM)

    NOTE If your IBM FileNet P8 system includes any of the listed components you must wait for the 3.5.*x* version of the component(s) to be released before upgrading any of your core IBM FileNet P8 Platform components.

If you are running IBM FileNet P8 3.5.0, you must apply the 3.5.*x* Service Pack by following the procedures in .

Upgrade Planning Considerations

General Requirements for all IBM FileNet P8 Systems

*   **Gather auxiliary documentation.**

    NOTE To download this and other IBM FileNet product documentation from the IBM web site, see .

    –   *IBM FileNet P8 Hardware and Software Requirements*. This document provides details for all FileNet P8 system components, as well as the minimum supported levels of third-party software

components. The information throughout the *FileNet P8 Platform Installation and Upgrade Guide* assumes you have met all applicable requirements listed in that document.

– FileNet P8 Platform user and group security help found at: **FileNet P8 Administration > Enterprise-wide Administration > Security > Users and groups**. This help topic provides a complete list of the user and group roles, accounts, and responsibilities required to install, configure, and maintain a FileNet P8 system.

– *IBM FileNet P8 Platform Security Questionnaire*. This document provides a list of security-related questions that, when answered by your site, can provide valuable feedback to the FileNet Upgrade/Installation Assurance Team that will be helping you install and deploy your FileNet P8 system.

– *IBM FileNet P8 Platform Release Notes*. This document provides details on new features, known issues, and resolved problems.

– FileNet P8 Platform Shutdown and Startup help found at: FileNet P8 Administration > Enterprise-wide Administration > Shutdown and Startup. This help topic describes how to shut down and restart FileNet P8 Platform components and some functional expansions. Manual, command line, and some sample batch file procedures are provided.

– *Installing IBM FileNet P8 Platform in a Non-English Environment Technical Notice*. This document will help you set up the product if your environment is not English-language based.

– *IBM FileNet P8 Platform High Availability Technical Notice*. This document provides details on how to set up your FileNet P8 system using clusters, farms, and other high-availability software and hardware. In so doing, the document also provides related disaster recovery information.

– *IBM FileNet P8 Platform Deployment Guide*. This document provides details on how to deploy a FileNet P8 system from a staging environment into a full production environment.

– *FileNet P8 Platform Troubleshooting Guide.* This document provides troubleshooting information on all aspects of the product.

– *IBM FileNet P8 Platform Performance Tuning Guide.* This document provides performance tuning information on all aspects of the product.

– *IBM FileNet P8 Rendition Engine Installation and Upgrade Guide*. This document provides details on how to install and upgrade Rendition Engine and Publishing Plug-in components.

• **Apply the required minimum level of IBM FileNet P8 patches to the currently installed software before you upgrade.** IBM FileNet patches and Hot Fix Packs often include feature updates that are required to ensure a successful upgrade. Therefore, prior to beginning your upgrade to IBM FileNet P8 Platform 3.5.*x*, you must have applied at least the minimum level of patches or Hot Fix Packs to your installed 3.0.0 components, as noted in the following table.

NOTE Over the life of IBM FileNet P8 3.5.*x* patch requirements could change. To determine what additional patches or Hot Fix Packs are available, see "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

Component	Hot Fix Pack	Software Build
Content Engine	P8CE-3.0.0-004	kl165.015
Process Engine	P8PE-3.0.0-002	pe165.015, pui165.021
Application Engine	P8AE-3.0.0-006	per165.30.a17
FileNet eForms	P8eF-3.0.0-002	raptor205.047
Process Analyzer	P8PA-3.0.0-002	pa165.017
Process Simulator	P8PS-3.0.0-002	ps165.007

For further details, see the "Hot Fix Pack and Patch Dependencies" topic in the *IBM FileNet P8 Platform Release Notes.* See "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

- **We recommend that you plan and test the upgrade on a designated test system first.** Verify the upgrade is successful by running functionality and stress tests. After successful verification perform the production upgrade as directed by your IBM services representative.

- **Consider Rendition Engine upgrade requirements.** The IBM FileNet CD package shipped as of the release of IBM FileNet P8 Platform 3.5.1 includes only a 3.5.1 version of Rendition Engine, not 3.5.0 (unlike other core components). Therefore, to upgrade from a 3.0.0 IBM FileNet P8 Platform environment that includes Rendition Engine, you must perform all the following steps as part of a single upgrade process before you can again use Rendition Engine features.

  a. Upgrade Content Engine, Process Engine, and Application Engine to version 3.5.0.

  NOTE At this point you can verify the functionality of these core components, but you will not be able to use Rendition Engine (Publishing) features until you perform the following steps.

  b. Apply the 3.5.1 Service Packs for Content Engine, Process Engine, and Application Engine.

  c. Uninstall Rendition Engine 3.0.0.

  d. Install Rendition Engine 3.5.1.

  For complete details, see the *IBM FileNet P8 Rendition Engine Installation and Upgrade Guide.*

Third-party Software Considerations

The 3.0.0 and 3.5.*x* versions of IBM FileNet P8 support common levels of third-party software, with the exception of WebSphere. Major levels of WebSphere have been changed from 5.0.x and 5.1 on the IBM FileNet P8 3.0.0 release, to 5.1 and 6.0 on the IBM FileNet P8 3.5.0 release. The upgrade path for WebSphere 5.0 users is to first upgrade to WebSphere 5.1.1, which is supported by both IBM FileNet P8 3.0.0 and 3.5.0 releases. After upgrading to IBM FileNet P8 3.5.*x*, you can upgrade to WebSphere 6.0.

Operating System Considerations

Content Engine

General

- **Note that during upgrade, the Content Engine setup program will apply updates to required third-party software.** You do not need to pre-install Apache HTTP or Microsoft MDAC upgrades prior to upgrading Content Engine since the IBM FileNet setup program will apply these upgrades for you.

Windows 2000 / 2003

- **Upgrade to Windows 2003 only AFTER you upgrade Content Engine.** A Windows 2003 upgrade is supported but not required for Content Engine 3.5.*x*.

  NOTE IBM FileNet field personnel indicate that most customers prefer to do a fresh installation of Windows 2003 rather than upgrading the Windows 2000 software. This is added reason to ensure that you first upgrade to Content Engine 3.5.*x* before moving to Windows 2003. This guides includes special instructions for applying Windows 2003 Service Pack 1.

  If you do upgrade to Windows 2003, be sure to see the "Configure Content Engine and SQL Servers for Windows 2003" in the *IBM FileNet P8 Platform Installation and Upgrade Guide* for the following procedures:

  – **Manually configure Microsoft Distributed Transaction Coordinator (MSDTC) and COM+.** To create object stores, you must manually configure MSDTC and COM+ on all 2003 servers running Content Engine and Microsoft SQL Server software.

  – **Manually Enable Microsoft Internet Information Services (IIS) and configure for WebDAV.** To use the Content Engine WebDAV Provider, you must ensure that Microsoft Internet Information Services (IIS) software is enabled on all Content Engine servers. IIS is enabled by default when you install Windows 2000.

Process Engine

UNIX

Allocate a minimum of 500 MB of additional disk space to the /fnsw disk volume. This space is required for upgrades and is in addition to the minimum space requirements called in the *IBM FileNet P8 Hardware and Software Requirements.*

Windows

Reset the fnsw user's password to the default value. The fnsw user's password must be reset to the default value before running Process Engine setup for the upgrade. After you change the password for the fnsw user, you must also update the Log On tab for the IMS ControlService and the Process Engine Services Manager accordingly. If the password is not changed before the upgrade, the upgrade will fail. After successfully upgrading Process Engine, reset the password again.

Network Considerations

Ensure availability of required port numbers. For a composite list of port numbers required for IBM FileNet P8 3.5.*x*, see the .

Database Considerations

General

Update to the appropriate patches BEFORE you upgrade IBM FileNet P8 components.

Oracle

Ensure you have applied appropriate Oracle patches to Oracle clients as well as servers. Be sure that clients remote to an Oracle database engines have comparable patches to the database server. Oracle clients include any machines remote from the Oracle database server where Content Engine, Process Engine, and IBM FileNet Enterprise Manager software is installed. You can download all the required Oracle9i database server patches from OracleMetaLink and install them.

MS SQL Server

No special considerations or changes required for upgrade to IBM FileNet P8 3.5.*x.*

Gather Pre-upgrade Information

General Considerations

- **Note the IBM FileNet P8 Platform Documentation URL.** If you have an existing application server in place with an IBM FileNet P8 Platform Documentation web site established, you can determine its URL by checking the Documentation server site preference in Workplace.

Database Engine

- **Note your current Database Instance Names, NLS, Character set configurations.** This information can help speed up the Installation/Upgrade Assurance Team's efforts to get the upgrades started and to troubleshoot any database-related problems as they arise.

Content Engine

- **Ensure that you have the necessary local administrative user accounts and passwords** to run the upgrade program on the various Content Engine servers and Enterprise Manager clients.

- **You must know the password of the user (e.g. FNCE_<*machine_name*>) that runs the Content Engine services**. If this is not available, you must reset the password to a known string *before* running the upgrade process.

- **If you have previously upgraded from IBM FileNet P8 2.0.1 to IBM FileNet P8 3.0.0, ensure you have run the IBM FileNet P8 3.0.0 Stored Search and Search Template Upgrade tool (SSUpgrade.exe) prior to upgrading to IBM FileNet P8 3.5.x.** SSUpgrade.exe can be found in the Upgrade Scripts directory. For details, see the *IBM FileNet P8 Platform 3.0.0 Upgrade Guide.*

- **Note the P8 Apache user account information, including the user's password.** If the password is not available, you must reset it before re-configuring (post Content Engine upgrade) the Apache2 service to run using this user.

- **Note the GCD (sysinit file) path on each Content Engine server, in particular on the master GCD server.** The GCD master is typically your initially installed Content Engine server.

- **Note your database connection string for each object store.**

- **Note you authentication connection provider string (default realm).**

- **Note your Windows domain-based Service account name and group used to start CE Services.**

Process Engine

- **(HP-UX only) Collect kernel parameter information** prior to upgrading the Process Engine software.

  Prior to upgrading, run the kmtune utility to collect current kernel parameter information and save the output. After the upgrade, use the HPjconfig utility to collect information on both required patches and recommended kernel parameters. The HPjconfig utility's recommendations for the kernel parameters are based upon analysis of historical data on the server. See the following website for configuration details.

  http://www.hp.com/products1/unix/java/infolibrary/prog_guide/java1/configuration.htm

- **Note the User and Group Base specified in the LDAP Connection tab in Process Engine Task Manager.** This information can be useful for troubleshooting during the upgrade process.

- **(Rules Engine Integration only) Note the location where iLog JRules software is installed on this Process Engine**, or where iLog JRules software will be installed on Process Engine after the upgrade. During the upgrade, Process Engine Setup prompts for the full path to the iLog JRules software installation directory.

Application Engine / Workplace

- **Gather the J2EE application server Admin user name and password or have the Administrator available during the upgrade.**

  User Name:

  Password:

- **Determine what components and installation option you used to install Application Engine 3.0.0.** When you upgrade Application Engine you must install the same components that are currently installed. If you installed Application Engine 3.0.0 using a Typical install, perform a Typical install; if you used a Custom install, perform a Custom install using the same selection of components. In particular, do not run a Typical upgrade if you initially ran a Custom installation (e.g., to install the Java API) or your Custom software component choices will not be updated as expected.

  To find out what Application Engine 3.0.0 components are currently installed, look for the following folders:

  – Process and Content Java APIs (only)

    ***<App_Engine_install_path>*/FileNet/lib2**

    ***<App_Engine_install_path>*/FileNet/Router**

  – Workplace web applications and Process and Content Java APIs

    ***<App_Engine_install_path>*/FileNet/lib2**

    ***<App_Engine_install_path>*/FileNet/Router**

    ***<App_Engine_install_path>*/FileNet/Workplace**

  – Workplace Toolkit Source Code (for custom application development)

    ***<App_Engine_install_path>*/FileNet/Workplace/source**

- **Record the current Process Router and Component Manager configuration data.** Existing Process Router and Component Manager configuration data is not retained during Application Engine upgrade. Because it will be necessary to re-enter at least the Process Router data following the Application Engine upgrade, we recommend recording the current data prior to beginning the upgrade. If you did not modify the default Application Engine 3.0.0 configuration for the Component Manager, it is not necessary to record and re-enter the Component Manager configuration data; it will be set to the Application Engine 3.5.*x* default values during the upgrade.

  To view the current configuration data, start Process Task Manager on Application Engine then, in the left pane:

  – Click **Routers** and, for each configured Process Router, note the values displayed on the **General** and **Advanced** tabs.

  – Click **Component Manager** and note the values displayed on the **General** and **Required Librar-ies** tabs.

- **Record your current bootstrap settings.** On upgrade, a new bootstrap.properties file is created. To preserve the Application Engine 3.0.0 bootstrap settings you *must* make a note of the current settings, and then re-enter these on first login to Workplace after the upgrade.

  CAUTION The Preference Settings are particularly important, as they control what Site Preference file to use with the system. To preserve the Site Preferences you have to re-enter the Preference Settings values for Object Store Location and Preference name exactly as they were in 3.0.0.

Before You Begin the Upgrade

- Be sure to read the "What's New" topic in the *IBM FileNet P8 Platform Release Notes.* Many of the new features may be interesting for your implementation of FileNet P8 Platform.

- Make sure the site has restorable backups of system and data of all FileNet P8 components. In case of an emergency, you may need to back out of the upgrade. For details on what to back up for FileNet P8 components, see the topic FileNet P8 Documentation > Enterprise-wide Administration > Backup and Restore in the general FileNet P8 Platform help.

- In some cases it may be necessary for FileNet Engineering and Support personnel to access the system for support. To facilitate such access, we request that you implement a reliable remote access method.

- If high availability is configured (clusters, farms, etc.), be sure to see the *IBM FileNet P8 Platform High Availability Technical Notice*.

- The formats for stored searches and search templates in IBM FileNet P8 3.5.*x* are identical to those in IBM FileNet P8 3.0.0. Before upgrading to IBM FileNet P8 3.5.0, be sure to upgrade any stored searches and search templates from IBM FileNet P8 2.0.1 to IBM FileNet P8 3.0.0.

- If you are upgrading Application Engine on a Windows server, you will need additional software to verify a process path in Step 3 on page 328.

  – Process Explorer for Windows, available from http://www.sysinternals.com.

    NOTE The software does not require installation.

    or

  – Software available as part of the Windows 2000 installation set. Follow the instructions found in Microsoft Knowledge Base Article 295714: *How to Break Down the System Process.* The article is available at http://support.microsoft.com.

    NOTE The software requires installation.

- Before beginning the upgrade, make sure no users or processes are accessing the IBM FileNet P8 system.

- Before beginning the upgrade, make sure you disable tasks such as:

  – scheduled automated backups

  – cron jobs

  – virus scanning

Upgrade Core Components

To upgrade the core IBM FileNet P8 Platform components

CAUTION You must upgrade the core components as described in the topics listed below before upgrading the optional add-on components as described in "Upgrade Add-On Components" on page 335.

1. Review IBM FileNet P8 Platform requirements and other planning considerations. See "General Requirements for all IBM FileNet P8 Systems" on page 297.

2. Upgrade the IBM FileNet P8 Platform documentation. Do Task 1 on page 306.

3. Ensure that you are running the minimum required release of IBM FileNet P8 Platform software and patches for doing an upgrade. Do Task 2 on page 312.

4. If you're using an Oracle database engine, do Task 3 on page 313. If the Oracle database is remote, do Task 4 on page 314 as well. (If you're using a SQL Server database engine, no upgrade is required).

5. Upgrade Content Engine. Do Task 5 on page 315.

6. Upgrade Process Engine. Depending on your server platform, do one of the following:

   • Task 6 on page 322 (UNIX)

   • Task 7 on page 325 (Windows 2000)

7. Upgrade Application Engine. Do Task 8 on page 328.

8. Install Service Packs and patches for core components. Do Task 9 on page 334.

Task 1: Upgrade IBM FileNet P8 Platform Documentation

Overview

You have two methods available to you for updating an existing 3.*x.x* IBM FileNet P8 Documentation installation:

- "Refresh 3.5.x IBM FileNet P8 Documentation Without Uninstalling" on page 307. Use this option if you already have 3.5.0 IBM FileNet P8 documentation installed with functional expansion help added in (e.g., for eForms).

- "Update 3.x.x IBM FileNet P8 Documentation by Uninstalling and Reinstalling" on page 308. Use this option if you have 3.0.0 documentation currently installed and need to upgrade to 3.5.0, or if you have IBM FileNet P8 Platform 3.5.0 documentation installed without any functional expansion help.

NOTES

- The refresh procedure assumes the following:

    - You have IBM FileNet P8 3.5.0 Platform documentation installed.

    - You have functional expansion documentation installed (for example, for Web Content Manager, IBM FileNet eForms, or IBM FileNet P8 Portlets).

    - You wish to replace the documentation at the existing location with updated files.

    - You are familiar with your application server's procedures for reinstalling or redeploying web site applications.

- IBM FileNet no longer ships Web Content Manager (WCM) help with IBM FileNet P8 Platform documentation. Instead, WCM help will ship independently with the WCM software. IBM FileNet will take the same approach with all other functional expansion help (such as IBM FileNet eForms and Records Manager).

- Before installing any IBM FileNet P8 Platform documentation, review the *IBM FileNet P8 Hardware and Software Requirements* for the required software versions, Service Packs, and Hot Fix Packs for third-party software.

- Under BEA WebLogic, IBM FileNet P8 documentation must be installed and deployed as a flat-file directory (\ecm_help). You cannot deploy as a WAR file or EAR file because, in both cases, the IBM FileNet P8 help remains packaged and the internal documentation search engine will not function as expected.

- Although some versions of BEA WebLogic support deployment of WAR-file-based web applications, you cannot deploy **ecm_help.war** on this application server platform. You must instead use the fully expanded IBM FileNet P8 documentation directory structure. Otherwise, the searches within the IBM FileNet P8 documentation will not work (you will receive null pointer errors).

- Under WebSphere, IBM FileNet P8 documentation must be installed and deployed as a WAR file (ecm_help.war). You cannot deploy as an EAR file because in that case the IBM FileNet P8 help remains packaged and the internal documentation search engine will not function as expected.

- Before installing the latest IBM FileNet P8 documentation, be sure to back up your existing IBM FileNet P8 documentation web site according to your site and application server procedures. This precaution will allow you to restore the web site quickly if for any reason you have to back out or delay your IBM FileNet P8 software upgrade.

- If you install any IBM FileNet P8 functional expansions as part of your upgrade (for example, Records Manager, IBM FileNet eForms, and Web Content Manager), be aware that:

  – You must copy the associated help for all those functional expansions onto the IBM FileNet P8 Platform documentation server.

  – You must update the index for the help Search feature as documented below. This action ensures that searches return all expected results. If you add help for other functional expansions later, you must re-run the procedure below for updating the help Search index.

    NOTE You must also update the help Search index if you intend to install FileNet-based help that you have customized or translated as part of your own application development. For further help-customization details, see the *IBM FileNet P8 3.5.0 Localizing and Customizing FileNet P8 Help Technical Notice.*

  – Any time you update the documentation search index, a backup of the files in the existing **Index\core** directory will be automatically copied to the **Index\IndexOld** subdirectory. You can reapply these backed-up files to the **core** subdirectory (after first removing the new files created there) if you need to return to your previous indexed state.

Refresh 3.5.*x* IBM FileNet P8 Documentation Without Uninstalling

You can refresh an existing 3.5.*x* installation of IBM FileNet P8 Platform documentation by simply copying the newer documentation files over the existing files, and then reindexing for Search.

However, IBM recommends this alternative to the full upgrade procedure shown later in this topic only if you have IBM FileNet P8 Platform 3.5.*x* documentation already installed with at least one set of functional expansion documentation added in.

If you have only IBM FileNet P8 Platform 3.5.*x* documentation installed (with no functional expansion help added in), use the standard upgrade procedure described in .

NOTE This refresh procedure requires that you copy the expanded **ecm_help** directory from the IBM FileNet P8 Platform Documentation CD over the existing documentation. This stipulation applies to all application servers, even those that required a WAR file for initial deployment of the existing 3.5.*x* documentation, namely WebSphere, Oracle, and Sun.

To refresh existing documentation without first uninstalling

1. Stop the server on which the existing documentation is deployed so that no processes can access the documentation.

2. On your application server, identify the deployment directory of the existing documentation.

3. From the deployment directory, delete (or move to a safe location) the files located in ***<deployment_path>*/ecm_help/search/index/core**. This step removes the Search index, which you must recreate later for the newer set of documentation files.

4. From the IBM FileNet P8 Platform Documentation CD (or from an installation directory on your server where you've copied the contents of this CD), copy the expanded **ecm_help** directory over the deployed ecm_help directory.

    NOTE If you install any IBM FileNet P8 functional expansions as part of your upgrade (for example, Records Manager, IBM FileNet eForms, and Web Content Manager), perform this same procedure to refresh your functional expansion help.

5. Update the Search index as described in .

6. Restart the server on which you refreshed the documentation.

Update 3.*x.x* IBM FileNet P8 Documentation by Uninstalling and Reinstalling

Use this option if you have 3.0.0 documentation currently installed and need to upgrade to 3.5.0, or if you have 3.5.0 IBM FileNet P8 Platform documentation installed without any functional expansion help.

To upgrade the IBM FileNet P8 Platform Documentation

1. Insert the *IBM FileNet P8 Platform Documentation* CD into the CD-ROM drive on, or have it accessible from, the machine where you intend to upgrade the documentation.

2. Update the documentation files from the CD or other location to your particular application server or installation location, as follows:

   NOTE In environments where Windows NTFS is used, there is a 256 character limit on file and folder names (folder depth). When trying to delete an existing IBM FileNet P8 Platform documentation web site, you may encounter access denied errors. See Microsoft Knowledge Base article http://support.microsoft.com/?kbid=320081 for more information.

   On Oracle:

   a. Stop the OC4J instance in which the IBM FileNet P8 Platform documentation application is running.

   b. Undeploy the IBM FileNet P8 Platform documentation application from the OC4J instance.

      NOTE Undeploy should delete all of the deployed directories of the IBM FileNet P8 Platform documentation application. If there are some directories left behind, delete them manually.

   c. If desired, copy the **ecm_help.war** file from the Documentation CD to a staging location from which to deploy the updated IBM FileNet P8 Platform documentation application. Alternatively, you can deploy the updated IBM FileNet P8 Platform documentation application directly from the CD.

   d. Skip to "Deploy and Verify Documentation Web Site" on page 310.

   On Sun Solaris:

   a. Undeploy the IBM FileNet P8 Platform documentation application.

   b. If desired, copy the **ecm_help.war** file from the Documentation CD to a staging location from which to deploy the updated IBM FileNet P8 Platform documentation application. Alternatively, you can deploy the updated IBM FileNet P8 Platform documentation application directly from the CD.

   c. Skip to "Deploy and Verify Documentation Web Site" on page 310.

   On WebSphere:

   a. Uninstall the IBM FileNet P8 Platform documentation application from Enterprise Applications.

   b. Delete the **ecm_help_war** folder from the ***<WebSphere_home>*/WebSphere/AppServer/temp/*<node_name>*/*<server>*** directory. This step ensures that no temporary copies of existing help files remain on the machine after you install updated help files.

   c. Copy the **ecm_help.war** file from the Documentation CD to the existing location on the application server (for example, to the **ecm_help** directory), or install directly from the CD.

On WebLogic:

a. Undeploy and delete the IBM FileNet P8 Platform documentation application, removing the **ecm_help** directory.

> **NOTE** You must stop the application server before you can delete the **ecm_help** directory.

b. Copy the **ecm_help** directory from the Documentation CD to the existing location on the application server from which you just removed the old version of the directory.

On Tomcat:

a. Shut down the application server.

b. Remove the entire existing IBM FileNet P8 Platform documentation application directory.

c. Remove the temporary working directory for the IBM FileNet P8 Platform documentation application from the **_<Tomcat_home>_\work\Catalina\localhost** directory.

d. Copy the **ecm_help** directory from the Documentation CD to the existing location on the application server from which you just removed the old version of the directory.

On JBoss:

a. Shut down the application server.

b. Remove the entire existing IBM FileNet P8 Platform documentation application directory.

c. Remove the temporary working directory for the IBM FileNet P8 Platform documentation from the **_<JBoss_home>_\work\MainEngine\localhost** directory.

d. Copy the **ecm_help** directory from the Documentation CD to the existing location on the application server from which you just removed the old version of the directory.

On a machine other than an application server:

a. Remove the entire existing **ecm_help** directory.

b. Copy the **ecm_help** directory from the Documentation CD to the existing location on the application server from which you just removed the old version of the directory.

3. Update the documentation files from the CD or other location to your particular application server or installation location, as follows:

Update Help Search Index

Perform this procedure to update the Search index after you have installed all the IBM FileNet P8 Platform and functional expansion documentation on a supported application server.

To update the help Search index

NOTE Perform this procedure only if you refreshed the core documentation, or you have installed functional expansion (or customized application) help onto your IBM FileNet P8 Platform documentation application server. Otherwise, skip to .

1. Make sure that the server is stopped on which the documentation is deployed, and that no processes are accessing the documentation.

2. If, for some reason, you have already deployed IBM FileNet P8 Platform documentation as a web application, undeploy that web application using the procedure for your application server.

3. Make sure you have copied the help for all your various functional expansions to a designated application server location containing the IBM FileNet P8 Platform help. Otherwise, you will have to repeat this procedure if you add new help later.

4. Open a command prompt on the application server.

5. From the command line, navigate to the **search** subdirectory under your **ecm_help** root directory.

6. Using a text editor, open the search-indexing script file that is appropriate to your application server operating system:

    (UNIX) `indexFiles.sh`

    (Windows) `indexFiles.bat`

7. Modify the `JAVA_HOME` variable in the script file with the path to your JRE installation. The defaults are:

    (UNIX) `JAVA_HOME="/usr/java/j2sdk1.4.1_02"`

    (Windows) `SET JAVA_HOME=c:\j2sdk1.4.2`

8. Save your changes and close the text editor.

9. If you intend to run the search indexer on a UNIX application server, ensure that you add execute permissions (chmod 755) to the **indexFiles.sh** file.

10. Run the updated search-indexing script file.

    By default, the script backs up the existing index files to **indexOld**, and then re-indexes all the help files starting from the root **ecm_help** directory.

    NOTE As you run the search-indexing script, you may notice periodic **Parse Abort** errors. You can ignore these error conditions, as they are benign and do not adversely affect the overall indexing process.

11. Go on to the next procedure.

Deploy and Verify Documentation Web Site

Perform this procedure after you have installed (and, if necessary, reindexed) the IBM FileNet P8 Platform documentation on a supported application server.

To deploy and verify the documentation web site

1. Deploy or install the copied IBM FileNet P8 Platform documentation as a web-site application. Use the appropriate instructions provided with your application server.

2. Verify that the application server and the new IBM FileNet P8 Platform documentation web site are running, as follows:

    a. From your web browser, access the following URL. The documentation's Help Directory should open.

        http://<docserver>:<port#>/<contextRoot>/

    where:

        docserver is the name of the Java web server.

> ***port#*** is the port number.
>
> ***contextRoot*** is the value of the Map to URL field that you specified when you deployed the IBM FileNet P8 Platform documentation application. If you specified **/ecm_help**, then the ***contextRoot*** is **ecm_help**.
>
> **NOTE** You can use multi-part root folders (e.g., **/docs/ecm_help**) if your application server supports them.

b. Click the **Search** link on the Help Directory toolbar. The documentation Search page should open.

c. Select one of the Search query result links. The associated help page should open.

NOTE When it is time to configure the online help location for the various IBM FileNet P8 components, either while running Setup programs or later via site preferences settings, use the URL in .

Task 2: Verify Current Release Level

Before you begin your IBM FileNet P8 Platform upgrade, you must first verify that your current system is running the software release and component patch levels supported for upgrade.

See the section "Plan the Upgrade" on page 296 for a list of upgrade paths, planning considerations, and pre-upgrade information and tasks that you must take into account, even before performing the task presented below.

To verify your IBM FileNet P8 system is ready for upgrade

1. Run the IBM FileNet P8 Platform 3.0.0 Version Tools. These tools will identify what release and patch level of IBM FileNet P8 software you are currently running. See the *IBM FileNet P8 Platform 3.5.x Version Tools Technical Notice* to determine the minimum 3.0.0 patch levels required to upgrade to IBM FileNet P8 3.5.*x*.

2. Ensure that all your users have closed their sessions and no longer have access to the system.

   NOTE You may choose to shut down all your IBM FileNet P8 Platform components as part of this step. (see the FileNet P8 Platform Shutdown and Startup topic at: FileNet P8 Administration > Enterprise-wide Administration > Shutdown and Startup for instructions). However, be aware that some components (e.g., Content Engine) must be running to begin the actual upgrade process, so the associated setup programs will restart the software as needed.

Task 3: Upgrade Oracle for Content Engine and Process Engine

Refer to the *IBM FileNet P8 Hardware and Software Requirements* for operating-system Service Pack and Oracle9i version and patch set requirements.

To upgrade Oracle

1. Install the required operating system patches or Service Pack on each Oracle database server.

2. Download all the required Oracle9i database server patches from OracleMetaLink and install them.

After completing this Oracle upgrade, continue as follows:

*   If the database is *local* to Process Engine and/or Content Engine software, continue at .

*   If the database is *remote*, then update the Oracle Client software as indicated in .

Task 4: Upgrade Oracle Client for Content Engine and Process Engine

Complete this task on all machines where Content Engine, Process Engine, and IBM FileNet Enterprise Manager software accesses a remote Oracle database via Oracle Client. If your database is *local*, skip this task and continue at , "Upgrade Content Engine".

Refer to the *IBM FileNet P8 Hardware and Software Requirements* for operating-system Service Pack and Oracle9i version and patch set requirements.

To upgrade Oracle Client

1. Install the required operating system patches or Service Pack on each machine where Oracle Client is installed.

2. Download all the required Oracle9i Client patches from OracleMetaLink and install them.

After completing this Oracle Client upgrade, continue at to upgrade Content Engine.

Task 5: Upgrade Content Engine

Upgrading Content Engine from IBM FileNet P8 3.0.0 to 3.5.0 involves the following major steps:

- Stop all Content Engine-related services.

- Upgrade the Content Engine software (including Apache HTTP) on each machine where it is installed and update the Global Configuration Database (GCD).

- Reset the permissions for the P8Apache user on each machine where Object Store Service is installed.

- Upgrade the database corresponding to each object store.

In general, a machine in the FileNet P8 domain will contain one or more components of the Content Engine software. The first machine to be upgraded must be one that contains a Content Engine Object Store Service, which you can determine by looking for a Content Engine Object Store Service entry in the Services node of Windows Computer Management. After upgrading this machine, you can upgrade (in any order) the Content Engine software on the other machines (including standalone Enterprise Manager or Client Connectivity clients such as Capture) in the FileNet P8 domain.

NOTES

- The IBM FileNet P8 3.5.0 installer (which runs when you upgrade Content Engine) uninstalls the IBM FileNet P8 3.0.0 Content Engine software automatically and then installs the IBM FileNet P8 3.5.0 Content Engine software. You may need to restart the machine after the upgrade completes if you have installed (as part of the upgrade) additional components.

- You do not need to check in checked-out documents before upgrading Content Engine software.

- To upgrade Content Engine software, you must be logged on as a local administrator and as a domain user and be logged onto the Active Directory domain in which the Content Engine software has been installed. You must also know the existing password of the FNCE_*<machine_name>* user that runs the Content Engine services and COM+ application.

- Back up the database before upgrading any Content Engine software.

- Back up each machine where you will be upgrading Content Engine software.

- Stop all FileNet P8 services, including Apache2, before upgrading any Content Engine software. This will ensure that no user is accessing the system while the upgrade is in progress.

- If you run the upgrade software over a network (rather than using a CD), you must map a network drive to the location of the upgrade software. Otherwise, the upgrade will fail when the machine restarts to continue with the configuration of Content Engine.

- During a Content Engine upgrade of Object Store Service from IBM FileNet P8 3.0.0 to 3.5.0, the upgrade process makes a backup copy of Windows registry keys that are in

  HKEY_LOCAL_MACHINE\system\CurrentControlSet\Services\VWServices

  and saves them in

  HKEY_CURRENT_USER\SOFTWARE\FileNet\ECM\Content Engine\VWServicesBak.

  The registry keys might have customized data modified by other applications, such as Process Engine. If you have altered this data since installing IBM FileNet P8 3.0.0 and you want it to apply to the upgraded IBM FileNet P8 Platform installation, manually copy the registry keys from the backup after the Content Engine upgrade completes.

- Take note of the directory where the Apache HTTP Server is installed on Object Store Service machines. You must install the updated Apache HTTP Server within this directory.

- You must have created a P8Apache user before doing this Content Engine upgrade if you haven't already done so, as documented in the topics "Install Content Engine (Typical)" and "Install Content Engine (Custom)" in *IBM FileNet P8 Platform Installation Guide Release 3.0.0*.

Stop all Content Engine-related services

WARNING Before shutting down the Content Engine-related services, allow all ongoing transactions to complete. Transactions are complete when the transaction log files in **C:\ProgramFiles\FileNet\ ContentEngine\Log** contain zero bytes.

You can also verify that all transactions have been processed by launching IBM FileNet Enterprise Manager and doing the following for each object store:

1. In the list view, under the object store icon, select and right-click the Search Results folder, and choose New Search.

2. In the Content Engine Query Builder dialog box, choose QueueItem from the Select From Table list.

3. Leave all default settings as is and click **OK**.

4. If there are any event items remaining in the queue, you will see them in the Query Status dialog box. If no event items appear, then all events have been processed.

Shut down all Content Engine-related services on all servers in the FileNet P8 domain

1. Log on as a local administrator on all machines where IBM FileNet Content Engine server software is installed.

2. Stop the following services:

    - Content Engine Object Store Service

    - Content Engine File Store Service

    - Content Engine Content Cache Service

    - Wasp Server for Java

    - FileNet Publishing HTML Plug-in Service

    - Process Engine Services Manager

    - Apache2

3. Right-click the Apache services monitor in the Windows system tray and click **Exit**.

For procedures and further details, see the *Shutdown and Startup Procedures for the FileNet P8 Platform 3.0.0 Components Technical Notice.* This help topic describes how to shut down and restart IBM FileNet P8 Platform components and some functional expansions. Manual, command line, and some sample batch file procedures are provided.

To upgrade Content Engine software

Starting with any machine where Content Engine Object Store Service is installed, run the following upgrade procedure on each server where Content Engine software is installed. On machines where a

standalone IBM FileNet Enterprise Manager is installed, refer instead to "Upgrade IBM FileNet Enterprise Manager (standalone)" on page 336 for upgrade instructions.

1. Log on to the Windows server as a user who is both a local administrator and a domain user in the domain where Content Engine software is deployed.

2. If it is not already running, start the Microsoft Distributed Transaction Coordinator. (Choose **Start > Programs > Administrative Tools > Services**, right-click **Distributed Transaction Coordinator**, and choose **Start**.)

3. Insert the *IBM FileNet P8 Content Engine 3.5.0* CD into the CD drive, navigate to the ContentEngine folder, and click **setup.exe**. The Content Engine Setup wizard opens.

   NOTE If Process Engine software is on this machine, the Content Engine Setup wizard will display a message informing you of the possibility that a Process Engine-related registry key "might have customized data that you want to apply to the upgraded system". Click **OK**.

4. Complete the Setup screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the Content Engine upgrade.
License Agreement	Review and accept the license agreement for IBM FileNet P8 software products, and then click **Next**.
Minimum Requirement	This screen appears only if the server where you are installing Content Engine software does not meet the suggested minimum system requirements posted in the *IBM FileNet P8 Hardware and Software Requirements*. Click **Next** if you wish to proceed with the installation, or click **Cancel** to exit the wizard.
Customer Information	Type your user name (required) and organization (optional). Accept or change the default install log location, and then click **Next**.
Custom Setup	Note the Content Engine components that will be upgraded. Select or deselect any components to upgrade (but do not deselect Object Store Service), and then click **Next**. **NOTE** If you wish to install Content Federation Services Server for Image Services, you'll need the path to the CD for this component.
WebDAV Configuration	This screen appears only if you selected Content Engine WebDAV Provider at the Custom Setup screen. Type a Windows domain account (which must be in the same domain where Content Engine resides) and password, and then click **Next**. **NOTE** This account is used for Microsoft Internet Information Server (IIS) logon authentication (not for Content Engine or object stores).
Install third-party software	This screen appears only if you have not already installed third-party software required by Content Engine: MDAC and Apache HTTP Server.

In this screen...	Perform this action...
Ready to Install	Do the following:
	a. If you already have an IBM FileNet P8 Platform Documentation web site installed, you can configure Content Engine components to access it, as follows.
	NOTE If you don't yet have a documentation web site installed, the wizard will put an empty documentation icon on the system desktop. You can update the documentation URL (and the documentation icon) from IBM FileNet Enterprise Manager.
	i. Select the provided check box.
	ii. Type the URL of the web site in the following format:
	http://<*docserver*>:<*port#*>/<*ecm_help*>)
	where:
	docserver is the name of the Java web server
	port# is the port number
	ecm_help is the root folder of the documentation web site
	You can use multipart root folders if your application server supports them (e.g., /docs/ecm_help).
	iii. Click **Test** to verify that the browser opens at the documentation URL. Then exit the browser.
	b. Click **Install** to install Content Engine. (The installation will take several minutes.)
P8 Domain Information	Record the information in the window, and then click **OK**.
Content Engine Global Configuration Data	Type the existing password of the FNCE_<*machine_name*> Windows Service Logon account and then click **Next**.
	NOTE If you have a Windows Service Logon account (for Content Engine services logon and the COM+ application) having fewer than 13 characters, you will see an error message (saying there is no such object on the server) when you click **Next**. To work around this error, exit the wizard, and skip to the procedure "To edit the Windows registry" on page 319.
	The wizard will now re-create all Content Engine-related services (including Apache2).
	If it is not already running, start the Content Engine Object Store Service.

In this screen...	Perform this action...
AddOns	Type a user name and password for a GCD administrative account, and then click **Finish**.
	If the logon is successful, the AddOns will be loaded into the FileNet P8 domain, and a message box will announce the successful configuration of the GCD and Content Engine. In this case, click **OK** and continue at Step 9.
	Otherwise, click **Cancel** and continue at Step 5 to find an IBM FileNet P8 Administrator user that can successfully log on to IBM FileNet Enterprise Manager.

5. Launch IBM FileNet Enterprise Manager and log on as the (fully distinguished) user that you logged on as in the AddOns wizard screen. If the logon fails, try logging on as another GCD administrator.

    A logon is successful if the Create New Object Store toolbar icon is enabled when you click the Object Stores folder icon in the tree view of IBM FileNet Enterprise Manager.

6. On a command line, run the following command (where *C:* is the installation drive letter):

    ```
    C:\Program Files\FileNet\Content Engine\ConfigGCD -A
    ```

7. If the AddOns dialog box opens, continue at Step 8. If instead you are prompted to supply a Windows service user, do the following:

    a. Launch the Windows registry editor (regedit).

    b. Delete the registry key HKLM\Software\FileNet\ECM\CurrentInstalling\Upgrade.

    c. Return to Step 6.

8. In the AddOns dialog box, specify the same user (and password) that successfully logged on to IBM FileNet Enterprise Manager in Step 5. Then click **Finish** to load the AddOns containers. If you are still unable to load the AddOns, contact your IBM services representative.

9.   If you have installed Content Federation Services Server for Image Services, you must reboot the machine.

10. Manually copy the Windows registry key HKEY_CURRENT_USER\SOFTWARE\FileNet\ECM\ Content Engine\VWServicesBak to the key HKEY_LOCAL_MACHINE\system\CurrentControlSet\ Services\VWServices.

11. If you have upgraded the Content Engine software on every server in the FileNet P8 domain, continue at "To reset permissions for the P8Apache user" on page 320; otherwise, choose the next machine where Content Engine software needs to be upgraded, and then return to Step 1. The sequence of wizard prompts you encounter will depend on which Content Engine software components you are upgrading.

To edit the Windows registry

Perform this procedure on any Content Engine server where an error message appeared when you specified a password and clicked **Next** at the Content Engine Global Configuration Data screen of the Content Engine Setup wizard (Step 4 of "To upgrade Content Engine software" on page 316).

1. Open the Windows registry on the Content Engine server.

2. Navigate to HKEY_CURRENT_USER\Software\FileNet\ECM\Content Engine\GCDValues.

3. Locate the "Windows Service Account" key. The value of this key is most likely of the form *<username>*. Replace the key value with the following (in Windows SamAccount format):

    <windows domain>\<username>

    NOTE The value of *windows domain* can be any string value, as long as it is followed by a slash ("\"). The value and slash will be stripped off when you re-run the GCD Wizard after the registry change.

4. (Windows 2000 only) Reboot the machine.

5. Continue at .

To reset permissions for the P8Apache user

The authentication-domain P8Apache user logging on to the Apache2 service needs permissions on certain installed Apache folders. Run the following procedure on each server where Object Store Service is installed. You must use the P8Apache-designated Windows domain user you used in IBM FileNet P8 Content Engine 3.0.0.

1. Navigate to the Apache installation folder (default location is **Program Files\Apache Group\Apache2**).

2. Give the Windows-domain P8Apache user the following rights to the script and document folders (**\cgi-bin** and **\htdocs**): Read and Execute, List Folder Contents, and Read.

3. Give the Windows-domain P8Apache user the following rights to the Apache logs (**\logs**) folder: Read and Execute, List Folder Contents, Read, and Write.

4. Give the Windows-domain P8Apache user the following rights to the **Apache.exe** executable file (default location is **Program Files\Apache Group\Apache2\bin\Apache.exe**): Read and Execute, and Read.

5. Select **Start > Programs > Administrative Tools > Services**, right-click the **Apache2** service, and stop the Apache2 service.

6. Right-click the **Apache2** service, select **Properties**, select the **Log On** tab, and click **This account**.

7. Browse for or type the P8Apache user, type and confirm the password, and then click **OK**.

8. Click **OK** if the P8Apache user now has the privilege to log on as a service.

9. Select the **General** tab and click **Start** to start the Apache2 service.

10. Close the Apache2 Properties dialog box and the Services snap-in.

To upgrade the object stores

The running time of the object-store upgrade utility, FNCEUpgrade, depends on the number of objects to be upgraded. If the object store contains a large number (on the order of millions) of objects, FNCEUpgrade may run for many hours.

WARNING Do not stop FNCEUpgrade while it is running; otherwise, the object store being upgraded may become unusable. Also, for an Oracle database, be sure that you have sufficient space for the undo tablespace (which should have autoextend specified, as it will grow quite large when the object store contains millions of objects).

While FNCEUpgrade is running, you can gauge its progress by checking the database CPU activity and disk I/O. Tracing database events can also provide some information on the progress of the upgrade.

Run the following procedure only once in your FileNet P8 domain.

1. Log on as a local administrator to a machine where an Object Store Service is installed. The local administrator must also be a domain user in the domain where Content Engine is deployed.

2. (SQL Server only) For more reliable database connectivity to SQL Server-based object stores, IBM strongly recommends that you enable TCP/IP Sockets, rather than Named Pipes, as the network protocol for the SQL Server client Net-Library. You can do this using the utility **Cliconfg.exe**, supplied with MDAC 2.8 and installed during Content Engine upgrade. Create a SQL Server alias if your SQL Server installation is a named instance or runs remotely and uses a non-default port.

3. Run the IBM FileNet P8 3.5.0 upgrade utility **FNCEUpgrade.exe** (default location **C:\Program Files\FileNet\Content Engine**).

4. In the Login box, type the user name and password for a GCD administrative account who is also an object store administrator for the object store you are upgrading. The upgrade utility will populate the list of object store servers and the list of object stores in the FileNet P8 domain.

5. Select an object store server (from among the Object Store Service servers) and an object store from the lists and click **Upgrade**. Then click **OK** in the message box that announces the successful upgrade of the object store.

6. (Oracle only). The upgrade utility prompts you to choose whether to drop unused table columns or not. Whatever your choice, these columns will be marked "unused" by Oracle (meaning that they are invisible but still present).

    Only as part of the last step in the object store upgrade will Oracle actually drop the unused columns, if that was your choice. If you chose not to drop the columns, you can still do so later by running the following two-line SQL script. To run this script you must be the same Oracle user who created the object store, or another Oracle user with administrative privileges and the same default tablespace.

    ```
    ALTER TABLE CvlElement DROP UNUSED COLUMNS;
    ALTER TABLE Subscription DROP UNUSED COLUMNS;
    ```

    Whether you have chosen to drop the columns now or later, the object store will be usable while the column drop is in progress.

7. Check the log file at (default location is **%systemroot%\temp**) on the machine where you are running the upgrade. This log file records the cumulative results of database actions associated with the upgrade utility.

8. Click **OK** to confirm a successful upgrade.

9. Repeat Step 5 through Step 8 for each object store and file store in the system.

    NOTE If the upgrade of an object store times out (as indicated by an error code of 0x8004e002 or 0x80004005 in a pop-up message box), navigate to Component Services/Computers/My Computer/Properties/Options/Transaction Timeout in Microsoft Distributed Transaction Coordinator, and specify a larger timeout interval (for example, 300 seconds). Then reboot the machine, and repeat the upgrade. Be sure to restore the original value of the timeout interval (usually 60 seconds) after the Object Store upgrade is complete.

10. When all object stores are upgraded, choose **Yes** to exit the **FNCEUgrade.exe** program.

Task 6: Upgrade Process Engine (Unix)

Stop all Process Engine-related services and applications

1. Log on as **root**.

2. If the PPM and/or any routers are currently configured for automatic startup, set them for manual startup. Set the PPM and any routers to manual startup if they are currently configured to autostart. See "Enabling automatic startup" in *Help for Task Manager* for details. After you have finished upgrading Process Engine, you can reconfigure the PPM and/or routers for automatic startup.

3. Stop the following components if they are running:

   • Process Simulator

   • Process Analyzer

   • Custom applications that require a router

   • Component Manager

   • Routers

   • Content Engine

   • Pooled Process Manager (PPM)

   • Process Service

   • Process Task Manager

For more information on shutting down the 3.0 software, see the topics under **FileNet P8 Administration > Enterprise-wide Administration > Shutdown and Startup** in the IBM FileNet P8 documentation. These topics describe how to shutdown and restart IBM FileNet P8 Platform components and some functional expansions. Manual, command line, and some sample batch file procedures are provided.

4. Enter the following at a command prompt after the FileNet software is shut down:

   killfnsw -D -A -y -S

5. On AIX, execute the following:

   slibclean

Update Process Engine (UNIX)

1. Verify that there is a current system backup.

2. Log on to the server as the **root** user.

3. Insert the Process Engine CD. Using the procedures appropriate for your operating system, execute **setup.sh**.

4. When prompted, enter the Oracle sys password. The password is required to run the following SQL scripts: pe_upgrade_scripts.sql, pe_create_stored_procedures.sql, and pe_grant_sp_permissions.sql.

   These scripts recreate a set of stored procedures that were initially created during installation of Process Engine 3.0.0. Running these scripts prior to upgrading ensures that any changes made to the stored procedures since 3.0.0 will be reflected in your database. For further information about these scripts, see "Process Engine SQL Scripts (Oracle databases only)" on page 369.

> **NOTE** If you enter the password incorrectly, sqlplus will re-prompt for the user name, which you must enter exactly as:
>
> sys as sysdba
>
> The password prompt then re-displays; re-enter the sys password. The scripts then run; output will be spooled to the directory you executed the scripts from.
>
> If an error message indicates that execution of the scripts failed, you must resolve the errors and re-run the scripts. Process Engine Setup cannot run successfully until these scripts have run.

5. Wait for files to finish unpacking.

6. Click **Next** at the Welcome screen.

7. Review and accept the license agreement for IBM FileNet P8 software products and then proceed with installation.

8. Enter the Documentation Server URL, which is where the IBM FileNet P8 Platform Documentation was installed. Your entry must be in the following format:

   http://*<docserver:port#>/<ecm_help>*

   where:

   docserver is the name of the Java web server.
   port# is the port number.
   ecm_help is the root folder of the documentation website. You can use multi-part root folders (e.g.,/docs/ecm_help) if your application server supports them.

9. Indicate whether you want to configure the Rules Engine interface to run on this Process Engine.

   - Click **Yes** if the iLog JRules software is already installed on this computer or if you know where on this computer JRules will be installed later. Setup then prompts you for the full path to the iLog JRules software installation directory.

   - Click **No** if the JRules software is not and will not be installed on this computer, or if you do not know exactly where on this computer JRules will be installed later.

     For details on completing the Rules Engine integration setup after the IBM FileNet P8 Platform upgrade is complete, see "Enable Rules Engine Integration" in the *IBM FileNet P8 Platform Installation Guide*.

10. A list of components and disk space requirements displays. Click **Next.**

11. Installation starts; when it completes, click **Finish**.

12. Check all log files and verify that there were no errors or failures. Correct any errors before proceeding. Log files to check include:

    - All **.lst** and **.log** files in the **/fnsw** directory

    - All **.log** files in the **/fnsw/local/logs/PE** directory

Set file permissions

Execute **fn_setup -d /** to set file permissions.

Verify Oracle Version Number

1. Open a new X window and log on as the fnsw user. Start the configuration editor by entering the following:

    fn_edit &

2. Click **Relational Databases**. The **Oracle** sub-tab should be on top. If not, click the **Oracle** sub-tab to bring it to the front.

3. Scroll to the right and locate the Version Number field, which reflects the version of the Oracle server software.

4. If necessary, change the version number to reflect the version of Oracle currently installed.

Enable ports

When Solaris starts up, it takes the first several ports, called anon ports, to use for its communication daemons. By default, the maximum tcp_smallest_anon_port is 32768. IBM FileNet uses several ports higher than 32768. See "IBM FileNet P8 Port Numbers" on page 364 for details on which ports IBM FileNet uses.

To use these ports on Solaris-based systems, you must first enable the ports by setting the smallest anon port to 32777. By doing so, the ports used by Solaris communication daemons will be 32777 or greater, leaving 32776 and lower available for IBM FileNet use.

The Solaris platform provides several different tools such as the netstat command to determine if a port is in use.

To determine the current tcp_smallest_anon_port setting enter the following at the command prompt:

    ndd -get /dev/tcp tcp_smallest_anon_port

If the port is less than 32777, you must enable port 32776.

To enable port 32776 on Solaris, use a text editor to edit the /etc/rc2.d/S69inet file.

Enter the following line:

    ndd -set /dev/tcp tcp_smallest_anon_port 32777

Reboot the Process Engine server.

Task 7: Upgrade Process Engine (Windows)

Stop all Process Engine-related services and applications

1. Log on as **fnsw**.

2. If the PPM and/or any routers are currently configured for automatic startup, set them for manual startup. Set the PPM and any routers to manual startup if they are currently configured to autostart. See "Enabling automatic startup" in *Help for Task Manager* for details. After you have finished upgrading Process Engine, you can reconfigure the PPM and/or routers for automatic startup.

3. Stop the following components if they are running:

   • Process Simulator

   • Process Analyzer

   • Custom applications that require a router

   • Component Manager

   • Routers

   • Content Engine

   • Pooled Process Manager (PPM)

   • Process Service

For more information on shutting down the 3.0 software, see the topics under **FileNet P8 Administration > Enterprise-wide Administration > Shutdown and Startup** in the IBM FileNet P8 documentation. These topics describe how to shutdown and restart IBM FileNet P8 Platform components and some functional expansions. Manual, command line, and some sample batch file procedures are provided.

4. Enter the following at a command prompt after the IBM FileNet software is shut down:

   killfnsw -D -y -S

5. In the Services dialog box, stop the following services if they are running, and set them to manual startup.

   • IMS ControlService (Process Engine)

   • Process Engine Services Manager (Process Engine and Content Engine)

   • CWConnector FileNet PE Connector (EAI only, on Process Engine, not required for 3.5.0)

   • VisiBroker Smart Agent (EAI only, on Process Engine, not required for 3.5.0)

   • VMAE Publisher service (Process Analyzer)

   • AEEngine service (Process Analyzer)

Reset the fnsw password to the default value

The fnsw user's password must be reset to the default value of BPMPassword1 before running Process Engine setup for the upgrade. After you change the password for the fnsw user, you must also use the Windows Services tool to update the Log On tab for the IMS ControlService and the Process Engine Services Manager accordingly. If the password is not changed before the upgrade, the upgrade will fail. After successfully upgrading Process Engine, reset the password again.

Update Process Engine (Windows)

1. Verify that there is a current system backup.

2. Log on as **fnsw**.

3. Insert the Process Engine CD. If Autorun is enabled, the Setup program will start. Select **Process Engine**. Otherwise, execute **Setup.exe**.

4. Click **Next** on the Welcome screen. Review and accept the license agreement for IBM FileNet P8 software products and then proceed with installation.

5. Enter the Documentation Server URL, which is where the IBM FileNet P8 Platform Documentation was installed. Your entry must be in the following format:

    http://*<docserver:port#>*/*<ecm_help>*

    where:

    docserver is the name of the Java web server.
    port# is the port number.
    ecm_help is the root folder of the documentation website. You can use multi-part root folders (e.g.,/docs/ecm_help) if your application server supports them.

6. Indicate whether you want to configure the Rules Engine interface to run on this Process Engine.

    *   Click **Yes** if the JRules software is already installed on this computer or if you know where on this computer JRules will be installed later. Setup then prompts you for the full path to the iLog JRules software installation directory.

    *   Click **No** if the JRules software is not and will not be installed on this computer, or if you do not know exactly where on this computer JRules will be installed later.

        For details on completing the Rules Engine integration setup after the IBM FileNet P8 Platform upgrade is complete, see "Enable Rules Engine Integration" in the *IBM FileNet P8 Platform Installation Guide*.

7. (Oracle only) When prompted, enter the Oracle sys password. A number of Oracle scripts then run, all contained within a script called pe_upgrade_script.sql. See "Process Engine SQL Scripts (Oracle databases only)" on page 369 for details on those scripts.

    NOTE If you enter the password incorrectly, sqlplus will re-prompt for the user name, which you must enter exactly as:

    sys as sysdba

    The password prompt then re-displays; re-enter the sys password. The scripts then run; output will be spooled to the directory you executed the scripts from.

    If an error message indicates that execution of the scripts failed, you must resolve the errors and re-run the scripts. Process Engine Setup cannot run successfully until these scripts have run.

8. Click **Finish** when all Process Engine files have been copied to the server.

9. Check all log files and verify that there were no errors or failures. Correct any errors before proceeding. Log files to check include:

    *   All **.lst** files in the **<install drive>:\fnsw** directory (Oracle databases only)

    *   All **.log** files in **\fnsw_loc\logs** directory and subdirectories

10. Restart the computer.

11. Recreate Windows desktop shortcuts for Process Task Manager. Using an old shortcut will return an error indicating the wrong version of Java was used when attempting to start a router.

12. Reset the fnsw user's password. After you change the password for the fnsw user, you must also use the Windows Services tool to update the Log On tab for the IMS ControlService and the Process Engine Services Manager accordingly.

13. Start the following services and set them back to automatic startup.

    • IMS ControlService

    • Process Engine Services Manager

Task 8: Upgrade Application Engine

This task includes Application Engine upgrade instructions for WebSphere and WebLogic (UNIX and Windows), JBoss, and Tomcat (Windows).

Before you upgrade Application Engine

1. Upgrade Content Engine and Process Engine.

2. Review the Application Engine details of the "Upgrade Overview" on page 297 and verify that you have recorded *all necessary settings* as outlined in "Application Engine / Workplace" on page 302.

   WARNING If you want to retain your existing Application Engine settings, it is essential to the success of the upgrade that you have recorded all necessary settings, and backed up the relevant configuration files before you start the upgrade installation.

   • Some of the existing preference files will be overwritten as part of the upgrade procedure.

   • The existing Actions.xml and web.xml files will be merged with the 3.5.0 versions the very first time the Workplace page is initiated after being deployed.

   • In addition, all comments added to the Actions.xml file will be lost during the merge.

   You will make backup copies of all important configuration files in "Backup, undeploy, and remove the Workplace web application from the J2EE application server." on page 329.

3. If necessary, upgrade the J2EE application server software. For information about supported application servers for Application Engine 3.5.0, see the *IBM FileNet P8 Hardware and Software Requirements*.

To upgrade Application Engine

1. Log on to the application server:

   UNIX - logon as root.

   Windows - log on as a member of the local Administrators group or a user with equivalent permissions.

2. Make sure the Process Router is stopped in the Process Task Manager.

   a. Launch the Process Task Manager.

   b. Stop the running router.

      NOTE This is the router configured and started as part of the IBM FileNet P8 Platform 3.0.0 installation. For more information, see *IBM FileNet P8 Platform Installation Guide*, Release 3.0.0x, Task 16: Start the Process Router.

   c. Exit the Process Task Manager.

3. (Windows only) Use Windows Task Manager to verify that the javaw.exe process is not running.

   If there is one or more javaw.exe processes running, do the following:

   a. Use *either* of the two methods below to identify the directory path to the javaw.exe process.

      • Download and run Process Explorer for Windows, available from http://www.sysinternals.com. The software does not require installation.

Find and select the javaw.exe process in Process Explorer. In the bottom window, look for the path identified in Step b below with Type = File. You may have to scroll down to find the path as there will be other directory paths in the window.

- Follow the instructions found in Microsoft Knowledge Base Article 295714: *How to Break Down the System Process* to find the directory path for the javaw.exe process.

  The article is available at http://support.microsoft.com.

  NOTE This method will require you to install software available as part of the Windows 2000 installation set.

b. If you find a javaw.exe process with the directory path *<AE_install_path>_jvm\bin*, use the Windows Task Manager or the application you are running to kill the process.

4. Backup, undeploy, and remove the Workplace web application from the J2EE application server.

NOTE During this step you will create backup copies of all configuration files stored in the /WEB-INF directory in your deployed Workplace folder. You will use these files in "(Optional) Copy the retained configuration files." on page 331 below if you would like to retain your previous settings.

- WebSphere

  i. Make a backup copy of the deployed Workplace directory:

     <WAS_HOME>/installedApps/<node_name>/app_engine_war.ear/app_engine.war

  ii. Stop the Workplace Application from the admin console.

  iii. Uninstall the Workplace application from **Enterprise Applications**.

  iv. Save the changes and stop the WebSphere server.

  v. Delete the temp Workplace directory (default: **app_engine_war)** from:

     <WebSphere_home>\WebSphere\AppServer\temp\<Node_name>\<Server>\app_engine_war

- WebLogic 7.0.x

  i. From the WebLogic administration console stop the Workplace Web Application.

  ii. Make a backup copy of the Workplace folder:

     <AE_install_path>/FileNet/Workplace

  iii. Undeploy and delete the Workplace Web Application.

  iv. Stop the WebLogic server.

- WebLogic 8.1.x

  i. From the WebLogic administration console stop the Workplace Web Application Module.

  ii. Make a backup copy of the Workplace folder:

     <AE_install_path>/FileNet/Workplace

  iii. Delete the Workplace Web Application Module.

  iv. Stop the WebLogic server.

- JBoss

  i. Stop the JBoss server.

  ii. Make a backup copy of the deployed Workplace directory:

    ***<JBoss_HOME>*/server/default/deploy/Workplace.war**

  iii. Delete the deployed Workplace directory:

    ***<JBoss_HOME>*/server/default/deploy/Workplace.war**

  iv. Delete the temporary Workplace directory for JBoss:

    ***<JBoss_HOME>*\server\default\work\MainEngine\localhost\Workplace**

- Tomcat

  i. Stop the Tomcat server.

  ii. Make a backup copy of the deployed Workplace directory:

    ***<Tomcat_HOME>*\webapps\Workplace**

  iii. Delete the deployed Workplace directory:

    ***<Tomcat_HOME>*\webapps\Workplace**

  iv. Delete the temporary Workplace directory for Tomcat:

    ***<Tomcat_HOME>*\work\Catalina\localhost\Workplace**

5. Upgrade the Application Engine software.

   a. Run the Application Engine installer to upgrade your installation.

   For more information, see "Install Application Engine" on page 205.

   NOTE When you run the installer to upgrade Application Engine a confirmation screen will appear to verify there is a version of Application Engine installed that can be upgraded. Also, be aware that the following installer screens will not appear on an upgrade:

   - Choose an application server

   - Content Engine Java API Configuration

   - Application Engine User Security

   - User Token Security

   - Documentation Configuration

   - Folder Location of bootstrap.properties

   b. Re-deploy, configure, and start Application Engine:

   - WebSphere - See "Configure and start Application Engine (WebSphere)" on page 213.

   - WebLogic - See "Configure and start Application Engine (WebLogic)" on page 220.

   - JBoss/Tomcat - See "Configure and start Application Engine (JBoss/Tomcat)" on page 223.

6. (Optional) Copy the retained configuration files.

   CAUTIONARY NOTES

   • This step *must* be performed after you have deployed the application but before you bring up the Workplace login page for the first time.

   • If you have made custom add-ons or modifications to the Application Engine installation being upgraded and any of these changes are referenced from the configuration files you should *not* include these changes in the Actions.xml and/or web.xml files until you have modified the newly installed Application Engine code with your add-ons or modifications. If you want to retain any other custom modifications to the Actions.xml and web.xml files you must manually copy the data from the version 3.0.0 backup files to the upgraded files listed above, after you have logged into Workplace. For more information see "Manually copy custom data." on page 332 below.

   Any configuration files in the deployed directory that you had manually modified must be added back by replacing the newly created files with the backup copies you created in "Backup, undeploy, and remove the Workplace web application from the J2EE application server." on page 329.

   Example: If you have enabled symmetric encryption after you first installed Application Engine you have added configuration details about the CryptoKeyFile.properties file and its location to the WcmApiConfig.properties file.

   To copy the backed up configuration files:

   For each of the files listed below copy the backup version of the file that you created in "Backup, undeploy, and remove the Workplace web application from the J2EE application server." on page 329 to the **\WEB-INF** folder in the deployed directory on your application server, overwriting the newly created corresponding file.

   • Actions.xml

   • Infopages.xml

   • web.xml

   • WcmApiConfig.properties

   • (If you use eForms) PolicyProcessors.xml

   NOTE For WebLogic there is normally no need to copy these files. By default the deployed directory is identical to the installed directory.

7. Reset bootstrap preferences.

   Follow the instructions in "Set bootstrap preferences" on page 238 to reset your bootstrap properties. Use the notes you made of your bootstrap settings in "Application Engine / Workplace" on page 302 to complete this step.

8. Restart the application server.

   a. Stop the application server.

b. (WebSphere only) Copy the web.xml file:

Copy the web.xml file located in:

> *<WAS_HOME>***/installedApps/<node_name>/app_engine_war.ear/app_engine.war/ WEB-INF/**

to:

> *<WAS_HOME>***/config/cells/<cell_name>/applications/app_engine_war.ear/ deployments/app_engine_war/app_engine.war/WEB-INF/**

c. Start the application server.

9. (Actions.xml and web.xml files only) Verify that any custom changes made to the Actions.xml and web.xml files are retained.

CAUTION If you have made custom modifications to the Actions.xml and/or web.xml files and would like to retain these changes after the upgrade, verify that the custom settings have been properly merged to the file(s). Do this after the initial sign into Workplace (Step 7) and restart of the application server (Step 8).

The Application Engine upgrades the .xml files when the Workplace site is brought up for the first time after deploying the upgraded Application Engine. New configuration files are created by merging the data stored in the existing web.xml and Actions.xml files with new configuration data stored in UpdateActions.xml and UpdateWeb.xml.

The old files (the backup files you copied in) are retained as backup copies in the **\WEB-INF** folder in the deployed directory on your server:

* *<ApplicationServer_HOME>***\...\WEB-INF\web.xml.old**

* *<ApplicationServer_HOME>***\...\WEB-INF\Actions.xml.old**

a. Verify custom changes.

After logging in, verify that all custom changes made in the Actions.xml and web.xml files were successfully transferred to the new files created by the installer in the **\WEB-INF** folder in the deployed directory on your server:

* *<ApplicationServer_HOME>***\...\WEB-INF\web.xml**

* *<ApplicationServer_HOME>***\...\WEB-INF\Actions.xml**

NOTE Any comments added to the Actions.xml file *will* be lost during the merge.

b. Manually copy custom data.

If your custom data was *not* retained in the upgrade you must manually copy the data from the version 3.0.0 backup files (*<filename>*.xml.old) to the upgraded files (*<filename>*.xml) listed above.

CAUTION After you have modified the files, you must restart the application server for the changes to take effect.

NOTES

* You must also copy any data you want to retain if you have made any custom add-ons or modifications to the Application Engine installation being upgraded and chose not to keep these changes after the upgrade, see . Manually copy any other custom data you want to retain to the upgraded files listed above.

- If your customizations include extended characters, save the web.xml or Actions.xml file as a UTF-8 encoded file.

10. Start a Process Router for each working isolated region.

    Process Router configuration data that existed prior to the Application Engine upgrade no longer exists, so you must re-enter it at this point. Use the settings you recorded earlier in the "Gather Pre-upgrade Information" section under "Application Engine / Workplace" on page 302. For more information, see "Start Process Routers" on page 242.

11. (IBM FileNet P8 systems using Image Services Integration only) Verify that you are running a supported version of ISRA .

    See the *IBM FileNet P8 Hardware and Software Requirements* document for details on supported ISRA versions.

    For more information on how to upgrade ISRA and configure Image Services Integration, see your ISRA documentation and "Enable Application Engine to use ISRA" on page 287.

Task 9: Apply Service Packs and patches for core components

To apply IBM FileNet P8 Platform Service Packs and patches

1. Install the Content Engine 3.5.*x* Service Pack. See the readme included on the Content Engine Service Pack CD.

2. Install the Process Engine 3.5.*x* Service Pack. See the readme included on the Process Engine Service Pack CD.

3. Install the Application Engine 3.5.*x* Service Pack. See the readme included on the Application Engine Service Pack CD.

4. Install any patches or *SS fixes required for the IBM FileNet P8 Platform. To determine whether additional patches or *SS fixes are needed, see "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

5. Depending on whether you are first installing IBM FileNet P8 Platform or upgrading from a previous release, continue with the procedure as follows:

   • If you are installing for the first time, configure the IBM FileNet P8 installation by performing "Configuration/Startup Tasks" on page 237.

   • If you are upgrading directly from IBM FileNet P8 3.5.0, or from 3.0.0 via 3.5.0, complete the upgrade procedure by going on to "Upgrade Add-On Components" on page 335.

Upgrade Add-On Components

You must upgrade all of the IBM FileNet P8 Platform core components before upgrading the add-on components listed in this topic. See "Upgrade Core Components" on page 305 for the tasks required to upgrade the IBM FileNet P8 Platform core components.

The IBM FileNet P8 Platform add-on components can be upgraded in any order except as noted below:

• You must upgrade Process Analyzer before upgrading Process Simulator.

To upgrade optional IBM FileNet P8 components

• Upgrade IBM FileNet Enterprise Manager (standalone). Do Task 10 on page 336.

• Upgrade Workplace Application Integration. Do Task 11 on page 337.

• Upgrade IBM FileNet Publishing components. Do Task 12 on page 338.

• Upgrade Custom Applications. Do Task 13 on page 339.

• Install patches for optional add-on components. Do Task 14 on page 345.

Task 10: Upgrade IBM FileNet Enterprise Manager (standalone)

NOTES

- Refer to *IBM FileNet P8 Hardware and Software Requirements* for the operating systems that support IBM FileNet Enterprise Manager.

- The machine must be logged in as a member of the Windows domain where the domain controller is located.

- The IBM FileNet Enterprise Manager does not require any other supporting Content Engine services or files to be located on the machine.

- When installing Content Engine services (e.g., Object Store Service, File Store Service) or IBM FileNet Enterprise Manager, the machine that you are installing on must be a member of the "deployment" domain (whether that be the parent or child domain) prior to installing.

To upgrade standalone Enterprise Manager system

1. Make sure you are logged in with an account that domain administrator privileges.

2. Insert the *IBM FileNet P8 Content Engine* CD into the CD drive and click **setup.exe**.

3. At the Content Engine *Welcome* screen click **Next**.

4. In the License Agreement screen, review and accept the license agreement for IBM FileNet P8 software products, and then click **Next**.

5. In the Customer Information screen, the **User Name** and **Organization** (optional) and click **Next**.

6. In the Custom Setup screen, verify that all Content Engine components *except* **Administrative Tools** are set not to be available, and click **Next**.

7. If you have an IBM FileNet P8 Platform Documentation Web site, select the check box and enter the Documentation URL. An example URL is:

   http://*<docserver:port#>*/*<ecm_help>*

   where:

   docserver is the name of the Java web server.
   port# is the port number.
   ecm_help is the root folder of the documentation website.

    NOTE If you do not enter a Documentation URL, an empty icon will be created and placed on the system desktop. If the Documentation URL is updated from the IBM FileNet Enterprise Manager, the Documentation icon URL will be updated.

8. Click **Test** to verify the Documentation URL is correct.

9. Click **Install** to complete this portion of the setup wizard.

You should then see the wizard message: "If you are only installing the Content Engine client components in this machine, you should configure this machine to use a FileNet P8 domain. Enter the host name of a running Object Store Service in the domain to allow the wizard to obtain the Global Configuration Data."

Type the host name, then continue to finish.

Task 11: Upgrade Application Integration

Upgrading to Workplace Application Integration 3.5.1 involves installing the new version on top of your existing Workplace Application Integration 3.5.0 install. The upgrade installation program detects the earlier version and notifies you before proceeding with the upgrade.

NOTE If you have the 3.0.0 version currently installed, you can upgrade directly to the 3.5.1 version. You do not need to first install the 3.5.0 version.

During the upgrade, the installer detects the Microsoft applications that were previously integrated with Workplace and retains that configuration. For example, if you had Microsoft Outlook integrated with Workplace in the 3.5.0 release, Microsoft Outlook is upgraded to 3.5.1 during the upgrade installation.

You cannot change your installed components during the upgrade. You can add or remove a Microsoft application from Application Integration after the upgrade using your Add/Remove Programs application.

To upgrade Workplace Application Integration

1. Log onto the machine with an account that has Administrator privileges.

2. In Workplace, go to the Author page, **General Tools** view.

3. Scroll down and click **Download Office Integration**. The **File Download** dialog box for your system appears. Do one of the following:

    •   Click **Open** to run the program from its current location.

    •   Click **Save**. In the **Save As** dialog box, find a location on your machine in which to download and save the ApplicationIntegration.exe file locally, and then click **Save**. Once the file is saved to your hard drive, double-click the file to run the upgrade installer.

    NOTE If you have Workplace Application Integration 3.5.0 currently installed, you are prompted about the impending upgrade. Click **Yes** to upgrade to the current version you are installing or click **No** to end the installation.

4. After the install is complete, click **Finish** to complete the upgrade process.

To verify your Workplace Application Integration upgrade

1. Start Microsoft Word.

2. From the **File** menu, click **FileNet P8**, point to **Open Document**, and then select **Select Item**. The Logon dialog box opens.

3. Log on using any valid domain account.

4. Click Options to view the Workplace address. The version number appears below the address.

5. Close all dialog boxes and close Microsoft Word.

Task 12: Update IBM FileNet Publishing components

If you have IBM FileNet Rendition Engine and associated Publishing Plug-in software currently installed, you can upgrade to the latest 3.5.*x* Service Pack version. For details and instructions, see FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

Task 13: Upgrade Custom Applications

This release includes changes to following development tools that might impact custom applications:

Business Process Management (BPM)

Content Engine COM API

Content Java API

Process Java API

Web Application Toolkit

Workplace Application Integration Toolkit

If you have any custom applications that were written using any of these APIs, Toolkits, or BPM, then review the appropriate sections below for code changes that might be required.

Business Process Management

The following changes have been incorporated into the BPM components:

- Process Designer web services "parameter mode" behavior no longer supports duplicate parameter names.

- The name of the Windows NT® Service that is installed on the PE, PA, and PS has been changed. The new names are as follows:

    - PE | Process Engine Services Manager | VWServicesPE

    - PA | Process Analyzer Services Manager | VWServicesPA

    - PS | Process Simulator Services Manager | VWServicesPS

    Startup or shutdown scripts for the VWServices Windows NT service (i.e. `net stop VWServices`) must be updated to reference the new names.

- The UNIX setup files for Process Engine have been regrouped and renamed as follows:

    - setupsun.bin, setupaix.bin, and setuphpux.bin are now setup.sh and setupsun2.bin

    - setupaix2.bin and setuphpux2.bin are now setupsun.bin, setupaix.bin, and setuphpux.bin

    User scripts which reference these files must be updated.

- The output format for user environment record dumps has changed for the Process Engine vwtool. The GUID in each record is now prefixed with "==". Applications which work programatically with output generated by vwtool must be updated.

- The Invoke workflows behavior for Process Orchestration has been changed as follows:

    - Version 3.5 Invoke workflows may call version 3.0 Receive workflows.

    - Version 3.0 Invoke workflows (or other web services clients) may not call version 3.5 Receive workflows without refreshing the Invoke partnerlinks and invoke steps (or for the case of another web services client, without regenerating their proxy classes). However, version 3.0 Invoke workflows may call a Receive workflow for a specific version (non-version-agnostic) that was upgraded from 3.0 to 3.5.

Process Designer

• Process Designer web services "parameter mode" behavior no longer supports duplicate parameter names.

Process Engine

• The UNIX setup files for Process Engine have been regrouped and renamed as follows:

    • setupsun.bin, setupaix.bin, and setuphpux.bin are now setup.sh and setupsun2.bin

    • setupaix2.bin and setuphpux2.bin are now setupsun.bin, setupaix.bin, and setuphpux.bin

• The output format for user environment record dumps has been changed for the vwtool. The GUID in each record is now prefixed with "==".

Process Engine Services Manager

• The Windows NT Service name has changed for the Process Engine Services Manager. The new service name is VWServicesPE.

Process Orchestration

• The Invoke workflows behavior for Process Orchestration has been changed as follows:

    • Version 3.5 Invoke workflows may call version 3.0 Receive workflows.

    • Version 3.0 Invoke workflows (or other web services clients) may not call version 3.5 Receive workflows without refreshing the Invoke partnerlinks and invoke steps (or for the case of another web services client, without regenerating their proxy classes). However, version 3.0 Invoke workflows may call a Receive workflow for a specific version (non-version-agnostic) that was upgraded from 3.0 to 3.5.

Process Services Manager

• The Windows NT Service name and display name has changed for the Process Services Manager. The manager is now composed of two pieces: the Process Analyzer Services Manager and the Process Simulator Services Manager. The new service names are VWServicesPA and VWServicesPS, respectively.

Content Engine COM API

Several API members have been deprecated in this release of the Content Engine COM API. While these members have been deprecated, they remain functional in this release. However, they will become obsolete in future releases and applications should avoid using them.

• **CreatePending** property, use **PendingOperation** property instead.

• **UpdatePending** property, use **PendingOperation** property instead.

• **DeletePending** property, use **PendingOperation** property instead.

• **DatabaseName** property, use **DatabaseConnectionString** property instead.

• **DatabaseServerName** property, use **DatabaseConnectionString** property instead.

• **DatabaseType** property, use **DatabaseConnectionString** property instead.

• **OIID** property.

- **ObjectStore** property.

- **SystemType** property.

- **ObjectType** property, use **IsOfClass** method instead.

- **InstanceType** property, use **IsOfClass** method instead.

- **QueryOperatorDescriptions** property, and is also only intended for internal use by Content Engine.

In addition, the following changes have been made to Content Engine:

- The **EnableOn** properties no longer have metadata, and therefore, cannot be queried.

- The Content Engine no longer fires an event on a version series for **cancel_checkout**. A distinct cancel_checkout event has been added as a result.

Content Java API

This release provides support for the new Content Engine event model (see the "What's New, Content Java API" section of the *IBM FileNet P8 Platform Release Notes, Release 3.5.0* for more information on the new event model). As part of the API changes made for this new event model, all of the **EnableOnXxx** properties of **Subscription** and **WorkflowSubscription** objects have been deprecated.

Although existing code that sets these properties will continue to work in this release, we recommend you convert your code to use the new **SubscribedEvents** property instead as the **EnableOnXxx** properties might be removed in a future release. Existing code that retrieves these deprecated properties will also continue to work if you retrieve the properties by name (for example, by calling **getProperties(***propNames***)** or **getPropertiesXML(***propNames***)**). However, the deprecated properties will no longer be returned in a call to the no-parameter form of **getProperties()**. In addition, you can no longer perform a search on these deprecated properties.

Removed from the API

The interfaces listed below—which were previously deprecated—have been removed from the API.

- **ClassDescription** interface – **getAuditDefinitions**() method

- **ObjectStore** interface – **installFeatureAddOn**(FeatureAddOn, int) method

- **Permission** interface – **PRINCIPAL_ID_SPECIAL** field

- **SecurityGrantee** interface – **getParentGroups**(boolean) method

Process Java API

In this release, several JAR files in the Process Java API have been renamed to provide better support for localization. Any application with **classpath** settings that include the following JAR file names must be updated to specify the new file names as indicated:

- **eProcess.jar** has been renamed to **pe.jar**

- **simclient.jar** has been renamed to **psclient.jar**

- **simulator.jar** has been renamed to **ps.jar**

- **fnpe3pt.jar** has been renamed to **pe3pt.jar**

A new JAR file, **peResources.jar**, has also been created in this release. This file contains the two English resource bundle files, as well as a peResources-ver.properties file. Note that the introduction of this new JAR file will not break existing applications.

Web Application Toolkit

A number of Web Application Toolkit members have been deprecated in this release, including the methods and fields listed below (broken down by class/interface) as well as the following classes and interface:

Removed from the API

The interfaces listed below—which were previously deprecated—have been removed from the API.

- **WcmImageAnchor** class
- **WcmFieldUtil** class
- **WcmControllerBehaviorInterface** interface

FormProcessor

- **doMapParameters**(WorkflowPolicy workflowPolicy, FormData formData)

WcmAuthoringDataProvider

- **getRealmGroups**(java.lang.String realmId, boolean refresh)
- **getRealmUsers**(java.lang.String realmId, boolean refresh)

WcmController

- **CREATE_WINDOW_ID**
- **FIRST_WINDOWID_KEY**
- **HOME_KEY**
- **POPUP_KEY**
- **PROPOGATE_WINDOW_ID**
- **WINDOW_SIGNED_IN_KEY**
- **windowIdParams**
- **configurePage**(javax.servlet.ServletContext applicationValue, javax.servlet.http.HttpServletRequest request, boolean windowIdRequired)
- **configurePage**(javax.servlet.ServletContext applicationValue, javax.servlet.http.HttpServletRequest request, int windowIdMode)
- **configurePage**(javax.servlet.ServletContext applicationValue, javax.servlet.http.HttpServletRequest request, int windowIdMode, java.lang.String[] windowIdParams)
- **getHomeURLKey**(java.lang.String windowId)
- **getWindowIdFromReferer**(java.util.Map popups, java.lang.String referer)
- **isNewWindowIdRequired**(javax.servlet.http.HttpServletRequest request)
- **setAutoFixWindowId**(boolean value)

WcmCredentialsServlet

- **getCredentialsRequestURL**(WcmDataStore ds, java.lang.String remoteHost, boolean wasBugFix, java.lang.String originScheme, java.lang.String originIP, java.lang.String originPort, java.lang.String

originSessionId, java.lang.String encodedSessionId, java.lang.String userId, java.lang.String password, java.util.Map extraParameters)

WcmDateUtil

- **convertDateToW3CDate**(java.util.Date date, boolean bDateOnly)

WcmEProcessDataProvider

- **doEvaluateExpression**(java.lang.String subscriptionName, java.lang.String expression, java.lang.String objectStoreId, java.lang.String objectId, java.lang.String verSerId, int objectType)

- **findGroups**(java.lang.String searchPattern, int searchType, int sortType, int maxBufferSize)

- **findUsers**(java.lang.String searchPattern, int searchType, int sortType, int maxBufferSize)

WcmException

- **loadResource**(java.io.InputStream in)

- **loadResource**(java.util.Map m)

WcmGetContentServlet

- **handleExternalDocument**(com.filenet.wcm.api.Document doc, javax.servlet.http.HttpServletResponse response, WcmDataStore ds)

WcmIcons

- **load**(java.lang.String sFilePath)

WcmModule

- **getClassPropertyKeys**()

- **getModulePropertyKeys**()

WcmSearchDataProvider

- **checkForChoiceLists**(org.w3c.dom.Document searchDefinition)

- **checkForUserListProperties**(org.w3c.dom.Document searchDefinition)

- **getAllObjectStores**(boolean refresh)

- **getChoiceList**(java.lang.String objectStoreName, java.lang.String searchID)

- **getSearchRequest**(java.util.Set selectProperties, java.util.Map propertyItems, java.util.Map verityItems, java.util.Set excludedClasses, int maxRecords)

WcmServerCredentials

- **getSessionToken**(WcmDataStore ds, java.lang.String appId, java.lang.String user, java.lang.String password, java.lang.String domain)

- **getUserDomain**()

WcmSignInPolicy

- **createServerCredentials**(WcmDataStore ds, java.lang.String appId, java.lang.String user, java.lang.String password, java.lang.String domain)

- **getEncodedSessionId**()

- **getLoginRoutingInfo**()

WcmSignInPolicyInterface

- **getLoginRoutingInfo**()

WcmSSLInfo

- **getSslHost**()

- **getSslHostDecoded**()

WcmString

- **loadResource**(java.io.InputStream in)

- **loadResource**(java.util.Map m)

WcmStringEditor

- **encode**(java.lang.String str)

WcmStringResourceLoader

- **load**(java.lang.String path, java.lang.String name, java.lang.Class resourceClass)

WcmStringResources

- **addLegacyPRB**(boolean exception, java.io.InputStream in)

- **addLegacyPRB**(boolean exception, java.util.Map m)

WcmXSLUtil

- **setXSLParameter**(java.lang.String key, org.w3c.dom.Node node)

- **setXSLParameter**(java.lang.String key, java.lang.String value)

- **setXSLParameter**(java.lang.String key, org.w3c.dom.NodeList nodes)

Workplace Application Integration Toolkit

A number of Workplace Application Integration Toolkit members have been deprecated in this release, including the interfaces and methods listed below:

- **ICheckinCmd** interface, use **ICheckinCmd2** interface instead.

- **ISelectObjectCmd** interface, use **ISelectObjectCmd2** interface instead.

- **ISessionLogin** interface, use **IStdSessionLogin** interface instead.

- The ability to share a single, unified login between all FileNet Office Add-Ins is now available. The IStdSessionLogin interface has been introduced to include two new initialization methods to support this behavior. **ISessionLogin::Initialize** method has been deprecated; the new **IStdSessionLogin::InitializeUnifiedLogin** and **IStdSessionLogin::InitializeViaSessionName** methods should be used instead.

Task 14: Install patches for add-on components

Install any patches or *SS fixes required for the IBM FileNet P8 Platform. To determine whether additional patches or *SS fixes are needed, see "Access IBM FileNet Documentation, Compatibility Matrices, and Fix Packs" on page 9.

Repair and Remove Software

This topic includes:

For instructions on how to remove the Rendition Engine software, see FileNet P8 Documentation > FileNet P8 System Installation > Rendition Engine Installation and Upgrade.

Remove the IBM FileNet P8 Platform documentation

The following topic details how to totally remove the IBM FileNet P8 Platform documentation. Due to the number of application server configuration possibilities, these examples should be used as reference only. Your specific installation directories and application names may vary.

To remove the IBM FileNet P8 Platform documentation

NOTE In some Windows installations where NTFS is used for the file system (Not FAT or FAT32), there is a known issue with deleting files (and folders) that are longer than 256 characters. For example, if you use a default WebSphere installation location, you may encounter an error where the IBM FileNet P8 Platform documentation files cannot be properly deleted due to the number of characters in the file/folder names. See the Microsoft Knowledge Base article http://support.microsoft.com/?kbid=320081 for additional information about deleting files (and folders) in this environment.

To remove the IBM FileNet P8 Platform documentation from a WebSphere server

1. Log on to the WebSphere IBM FileNet P8 Platform documentation server.

    • UNIX - Log on as a user with write access to where the IBM FileNet P8 Platform documentation files are installed.

    • Windows - Log on as a user with Administrative rights.

2. Verify the WebSphere server is running.

3. Log in to the WebSphere Administrative Console.

4. Stop the IBM FileNet P8 Platform documentation Enterprise Application (eg: ecm_help.war).

5. Uninstall the IBM FileNet P8 Platform documentation application (eg: ecm_help.war).

6. Save the changes.

7. Delete the IBM FileNet P8 Platform documentation folder from the installation location.

8. Delete any Temp folder(s) for the IBM FileNet P8 Platform documentation.

WARNING Do not remove any other IBM FileNet P8 application (eg: Workplace) files that are installed on the web application server.

9. Restart the WebSphere web server.

To remove the IBM FileNet P8 Platform documentation from a WebLogic server

1. Log on to the WebLogic application server.

    • UNIX - Log on as a user with write access to where the ecm_help files are installed.

    • Windows - Log on as a user with Administrative rights.

2. Verify the WebLogic server is running.

3. Log in to the WebLogic Administrative Console.

4. Undeploy the IBM FileNet P8 Platform documentation web application.

    • WebLogic 7.0.x

        i.   Stop the Workplace Web Application (eg: ecm_help).

        ii. Undeploy the Workplace Web Application (eg: ecm_help).

- WebLogic 8.1.x

  i. Stop the Workplace Web Application Module (eg: ecm_help).

  ii. Delete the Workplace Web Application Module (eg: ecm_help).

5. Delete any Temp folder(s) for the IBM FileNet P8 Platform documentation.

   WARNING Do not remove any other IBM FileNet P8 application (eg: Workplace) files that are installed on the web application server.

6. Restart the WebLogic web server.

To remove the IBM FileNet P8 Platform documentation from an Apache/Tomcat server

1. Log on to the Apache/Tomcat application server:

   - Linux/UNIX - Log on as a user with write access to where the ecm_help files are installed.

   - Windows - Log on as a member of the local Administrators group or a user with equivalent permissions

2. Shut down the Apache/Tomcat server.

3. Remove the IBM FileNet P8 Platform documentation files from the ecm_help install location (eg:<Tomcat_HOME>\webapps\ecm_help).

4. Remove the Temp working directory (eg: <Tomcat_HOME>\work\Catalina\localhost\ecm_help).

   WARNING Do not remove any other IBM FileNet P8 application (eg: Workplace) files that are installed on the web application server.

5. Restart the Apache/Tomcat web server.

To remove the IBM FileNet P8 Platform documentation from a JBoss server

1. Log on to the JBoss application server:

   - Linux/UNIX - logon as a user with write access to where the ecm_help files are installed.

   - Windows - Log on as a member of the local Administrators group or a user with equivalent permissions.

2. Shut down JBoss server.

3. Remove the IBM FileNet P8 Platform documentation .war folder (eg: <JBoss_HOME>\server\default\deploy\ecm_help.war).

4. Remove the Temp working directory (eg: <JBoss_HOME>\server\default\work\MainEngine\localhost\ecm_help.war).

   WARNING Do not remove any other IBM FileNet P8 application (eg: Workplace) files that are installed on the web application server.

5. Restart the JBoss web server.

Remove Content Engine

You can use Content Engine Setup wizard or the Windows Control Panel to remove a Content Engine installation.

NOTE The following items will *not* be removed by removing a CE installation:

- Anything installed by the various wizards supplied with Content Engine, including the object stores created by the Create Object Store Wizard.

- The database containing Content Engine property information.

- Windows Active Directory entries.

- Users created to install or administer Content Engine.

- The directories identified as Content Engine Object Stores or Content Engine Content Cache Stores, as these contain content that presumably exists outside the need to have Content Engine manage them.

- The directory **\Program Files\FileNet\Content Engine\sysconfig**. This directory will not be removed because it contains the Global Configuration Data (GCD) or a copy of it (if the server is not the "GCD Master").

- File Store directories containing the content (e.g., documents) and Verity indexes.

To remove a Content Engine installation using Content Engine Setup

1. Insert the *IBM FileNet P8 Content Engine* CD into the CD-ROM drive, navigate to the Content Engine folder, and click **setup.exe**.

2. Complete the Content Engine Setup wizard screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the removing the Content Engine installation.
Program Maintenance	Click **Remove** and then click **Next**.
Remove the Program	Click **Remove**.

3. If you want to completely remove all traces of the Content Engine installation, delete the **C:\Program Files \FileNet** directory.

To remove a Content Engine installation using the Windows Control Panel

1. Open the Windows Control Panel.

2. Double-click the **Add/Remove Programs** icon.

3. Highlight FileNet Content Engine in the list of currently installed programs and click **Remove** to launch the Content Engine Setup wizard.

4. Click **Yes** to confirm you want to remove the Content Engine installation.

5. If you want to completely remove all traces of the Content Engine installation, delete the **C:\Program Files \FileNet** directory.

Repair Content Engine

NOTES

- You can use the Content Engine Setup wizard, Windows Control Panel or from a Command Prompt to repair a Content Engine installation. Item such as missing files, corrupt files, program shortcuts, and registry entries will be repaired.

- When you run the Content Engine Setup wizard on a machine that already has the Content Engine software installed, the setup program will open in maintenance mode. This mode allows you to modify, repair or remove the previous installation. You must have the *IBM FileNet P8 Content Engine* CD available or a valid network connection to the Content Engine installation media.

To repair a Content Engine installation using Content Engine Setup

1. Insert the *IBM FileNet P8 Content Engine* CD into the CD-ROM drive, navigate to the Content Engine folder, and click **setup.exe**.

2. Complete the Content Engine Setup wizard screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next** to proceed with the repairing the Content Engine installation.
Program Maintenance	Click **Repair** and then click **Next**.
Install third-party software	Click **Next**.
Ready to Repair	Click **Repair** to begin repairing the Content Engine installation. (The repair may take several minutes.)
Completing the Content Engine Setup wizard	Click **Finish**.

To repair a Content Engine installation using the Windows Control Panel

1. Insert the *IBM FileNet P8 Content Engine* CD into the CD-ROM drive.

2. Open the Windows Control Panel.

3. Double-click the **Add/Remove Programs** icon.

4. Highlight IBM FileNet Content Engine in the list of currently installed programs and click **Change** to launch the Content Engine Setup wizard.

5. Complete the Setup screens as follows:

In this screen...	Perform this action...
Welcome	Click **Next**.
Program Maintenance	Click **Repair** and then click **Next**.
Install third-party software	Click **Next**.

In this screen...	Perform this action...
Ready to repair	Click **Repair** to begin repairing the Content Engine installation. (The repair may take several minutes.)
Completing the Content Engine Setup wizard	Click **Finish**.

Remove Process Engine (Windows)

NOTE You must remove the software in the order listed below. Removing Image Services (step 6) prior to removing Process Engine (step 3) will leave the Process Engine software in a state that will not allow removal with this procedure.

1. Stop any of the following components that are running. For procedures and further details, see the FileNet P8 Platform Shutdown and Startup help topic found at: **FileNet P8 Administration > Enterprise-wide Administration > Shutdown and Startup**.

Component	Location
Process Simulator	
Process Analyzer	
Custom applications that require a router	varies
Component Manager	Application Engine
Routers	Application Engine or Content Engine
Application Engine	
Content Engine	
Pooled Process Manager (PPM)	Process Engine
Process Service	Process Engine
Process Task Manager	

2. Start the **Control Panel > Add/Remove Programs**.

3. Click **Remove** for the Process Engine application.

4. Click **Yes** to confirm you want to remove Process Engine for Windows 3.5.0 installation.

5. Click **Finish**.

6. Click **Remove** for the FileNet Image Services 4.0.20 software.

7. Click **Yes** to confirm you want to remove the Image Services software.

8. Press **Enter** to continue with the uninstall.

9. Close the Add/Remove snap-in.

10. Close the Control Panel.

CAUTION (MS SQL Server only): If you plan to reinstall Process Engine and will configure Process Engine to use a different MS SQL database, you must remove the database that was configured for the Process Engine installation. In addition, you must remove the following FileNet user ids from the SQL Server Security folder before re-installing Process Engine software:

- f_sw

- f_cso

- f_maint
- f_open
- f_operator
- f_sqi

Remove Process Engine (UNIX)

1. Stop any of the following components that are running. For procedures and further details, see the FileNet P8 Platform Shutdown and Startup help topic found at **FileNet P8 Administration > Enterprise-wide Administration > Shutdown and Startup**.

Component	Location
Process Simulator	
Process Analyzer	
Custom applications that require a router	varies
Component Manager	Application Engine
Routers	Application Engine or Content Engine
Application Engine	
Content Engine	
Pooled Process Manager (PPM)	Process Engine
Process Service	Process Engine
Process Task Manager	

2. Enter the following after the FileNet software is shut down:

   ```
   kill fnsw -A -D -y
   ```

3. On AIX, execute the following:

   ```
   slibclean
   ```

4. Log onto the Process Engine server as the **root** user.

5. At a command prompt, run the following command.

   ```
   /fnsw/_pws_uninst/pws_uninstall.bin
   ```

6. Follow the prompts on the screen to remove the Process Engine software.

7. At a command prompt, run the following script.

   ```
   /tmp/setup_dir/uninstall
   ```

   Alternatively, you can run the uninstall script from the Process Engine installation media by running the following script:

   ```
   /<cdrom>/<OS>/setup_dir/uninstall
   ```

   where:

   <cdrom> = location of the cd mount point.

   <OS> = Operating System version (AIX_#, HP-UX_#, SunOS_#)

The uninstall script shuts down the Process Engine software, removes the software from the **/fnsw** directory, and removes the directory structure under **/fnsw**. The uninstall script removes the Process

Engine entries in the **/etc/services**, **/etc/system**, **/etc/inittab** and **/etc/devlink.tab** files. On an AIX-based Process Engine, the script also removes smit entries.

Remove Application Engine (WebSphere)

This task includes Application Engine removal instructions for WebSphere on UNIX and Windows platforms.

To remove the Application Engine software

1. Log on to the application server.

    •   UNIX - Log on as a user with write access to the **/bin** directory and the directory where Application Engine is installed.

    •   Windows - Log on as a user with Administrative rights.

2. Stop the Process router before closing the Process Task Manager.

    NOTE (Windows) If the router command window is open, close it.

3. Log in to the WebSphere Administrative Console.

4. Uninstall the Workplace application.

    a. Stop the Workplace process in the admin console.

    b. Uninstall the Workplace application from **Enterprise Applications**.

5. Navigate to the **/_uninst** folder under the Application Engine installation location. The default location is:

    •   UNIX - **/opt/**

    •   Windows - **C:\Program Files**

6. Run the uninstall program:

    •   UNIX - **filenet_app_engine_setup_uninstall.bin**

    •   Windows - **filenet_app_engine_setup_uninstall.exe**

    NOTE For Windows, you can also use **Add/Remove Programs** from the Control Panel to remove the IBM FileNet Application Engine.

    On Windows, when you click **Next** on the Application Engine Uninstaller Welcome screen, the second screen asks you to wait while Windows Task Manager service shuts down before continuing the uninstall. This can take a few moments. Wait for the shutdown to complete, then complete the uninstall wizard from the next screen.

7. Delete the Workplace folder:

    ***<WAS_HOME>*/temp/*<node_name>*/*<application_server_name>*/Workplace**

8. (If Application Engine is the only IBM FileNet P8 application installed on the server) Delete the ***<AE_install_path>*\FileNet** directory.

9. (UNIX) Remove the P8TASKMAN_HOME system environment variable.

    If Application Engine is the *only* FileNet P8 application running on the server you must remove the P8TASKMAN_HOME system environment variable to complete the uninstallation.

    WARNING Do *not* remove the system environment variable if any other FileNet P8 application is installed on the server.

Remove Application Engine (WebLogic)

This task includes Application Engine removal instructions for WebLogic on UNIX and Windows platforms.

To remove the Application Engine software

1. Log on to the application server.

   • UNIX - Log on as a user with write access to the **/bin** directory and the directory where Application Engine is installed.

   • Windows - Log on as a user with Administrative rights.

2. Stop the Process router before closing the Process Task Manager.

   NOTE (Windows) If the router command window is open, close it.

3. Undeploy the Workplace application.

   • WebLogic 7.0.x

     i.   Stop the Workplace Web Application.

     ii. Undeploy the Workplace Web Application.

   • WebLogic 8.1.x

     i.   Stop the Workplace Web Application Module.

     ii. Delete the Workplace Web Application Module.

4. Navigate to the **/_uninst** folder under the Application Engine installation location. The default location is:

   • UNIX - **/opt/**

   • Windows - **C:\Program Files**

5. Run the uninstall program:

   • UNIX - **filenet_app_engine_setup_uninstall.bin**

   • Windows - **filenet_app_engine_setup_uninstall.exe**

   NOTE For Windows, you can also use **Add/Remove Programs** from the Control Panel to remove the IBM FileNet Application Engine.

   On Windows, when you click **Next** on the Application Engine Uninstaller Welcome screen, the second screen asks you to wait while Windows Task Manager service shuts down before continuing the uninstall. This can take a few moments. Wait for the shutdown to complete, then complete the uninstall wizard from the next screen.

6. (If Application Engine is the only IBM FileNet P8 application installed on the server) Delete the **<AE_install_path>\FileNet** directory.

7. (UNIX) Remove the P8TASKMAN_HOME system environment variable.

   If Application Engine is the *only* IBM FileNet P8 application running on the server you must remove the P8TASKMAN_HOME system environment variable to complete the uninstallation.

   WARNING Do *not* remove the system environment variable if any other IBM FileNet P8 application is installed on the server.

Remove Application Engine (JBoss/Tomcat)

This task includes Application Engine removal instructions for JBoss and Tomcat on Windows and JBoss on Linux.

To remove the Application Engine software

1. Log on to the application server:

   • Linux - logon as a user with write access to the **/bin** directory.

   • Windows - Log on as a member of the local Administrators group or a user with equivalent permissions.

2. Stop the Process router before closing the Process Task Manager.

   NOTE If the router command window is open, close it.

3. Shut down JBoss/Tomcat.

4. Navigate to the **/_uninst** folder under the Application Engine installation location. The default location is:

   • Linux - **/opt/**

   • Windows - **C:\Program Files**

5. Run the uninstall program:

   • Linux - **filenet_app_engine_setup_uninstall.bin**

   • Windows - **filenet_app_engine_setup_uninstall.exe**

   NOTE For Windows, you can also use **Add/Remove Programs** from the Control Panel to remove the IBM FileNet Application Engine.

   On Windows, when you click **Next** on the Application Engine Uninstaller Welcome screen, the second screen asks you to wait while Windows Task Manager service shuts down before continuing the uninstall. This can take a few moments. Wait for the shutdown to complete, then complete the uninstall wizard from the next screen.

   The Uninstall Wizard will remove the following components:

   • Workplace Web Applications

   • Process Java API and Content Java API

6. Remove temporary files and directories.

   • JBoss:

     i. Remove the **Workplace.war** folder from **<JBoss_HOME>\server\default\deploy**.

     ii. Remove the Temp working directory for Workplace from **<JBoss_HOME>\server\default\work\MainEngine\localhost**

   • Tomcat:

     i. Remove the **\Workplace** folder from **<Tomcat_HOME>\webapps**.

     ii. Remove the Temp working directory for Workplace from **<Tomcat_HOME>\work\Catalina\localhost**

7. (If Application Engine is the only IBM FileNet P8 application installed on the server) Delete the ***<AE_install_path>\FileNet*** directory.

8. (LINUX) Remove the P8TASKMAN_HOME system environment variable.

    If Application Engine is the *only* IBM FileNet P8 application running on the server you must remove the P8TASKMAN_HOME system environment variable to complete the uninstallation.

    WARNING Do *not* remove the system environment variable if any other IBM FileNet P8 application is installed on the server.

Remove Application Engine (Oracle, Sun Java, and generic application servers)

This task includes Application Engine removal instructions for generic application servers on UNIX and Windows platforms. In addition, these instructions apply to Oracle Application Server and Sun Java Application Server installations.

To remove the Application Engine software

1. Log on to the application server:

    *   UNIX - Log on as a user with write access to the **/bin** directory and the directory where Application Engine is installed.

    *   Windows - Log on as a user with Administrative rights.

2. Stop the Process router before closing the Process Task Manager.

    NOTE (Windows) If the router command window is open, close it.

3. Undeploy the Workplace application.

    If supported by your application server, use your application server's console to undeploy/delete the deployed Workplace application.

4. Navigate to the **/_uninst** folder under the Application Engine installation location. The default location is:

    *   UNIX - **/opt/**

    *   Windows - **C:\Program Files**

5. Run the uninstall program:

    *   UNIX - **filenet_app_engine_setup_uninstall.bin**

    *   Windows - **filenet_app_engine_setup_uninstall.exe**

    NOTE For Windows, you can also use **Add/Remove Programs** from the Control Panel to remove the IBM FileNet Application Engine.

    On Windows, when you click **Next** on the Application Engine Uninstaller Welcome screen, the second screen asks you to wait while Windows Task Manager service shuts down before continuing the uninstall. This can take a few moments. Wait for the shutdown to complete, then complete the uninstall wizard from the next screen.

6. (If Application Engine is the only IBM FileNet P8 application installed on the server) Delete the **<AE_install_path>\FileNet** directory.

7. (UNIX) Remove the P8TASKMAN_HOME system environment variable.

    If Application Engine is the *only* IBM FileNet P8 application running on the server you must remove the P8TASKMAN_HOME system environment variable to complete the uninstallation.

    WARNING Do *not* remove the system environment variable if any other IBM FileNet P8 application is installed on the server.

Remove the Application Engine ISRA Servlet

This task includes Application Engine ISRA Servlet removal instructions for Windows and UNIX environments.

NOTE Since the installed names for the ISRA Servlet are configurable on the supported application servers (WebLogic, WebSphere, JBoss and Tomcat), the information below may not be the same as your environment. Make the appropriate name changes as required for your environment.

To remove the Application Engine Servlet software

1. Log on to the application server.

   UNIX - Log on as a user with write access to the /bin directory and the directory where ISRA Servlet is installed.

   Windows - Log on as a user with Administrative rights.

2. Undeploy the ApplicationEngineISRAServlet application. This step is similar to that required to undeploy the Workplace application.

   WebSphere:

   a. Stop the ApplicationEngineISRAServlet process in the Admin console

   b. Uninstall the ApplicationEngineISRAServlet application from Enterprise Applications

   WebLogic:

   a. Stop the ApplicationEngineISRAServlet Web Application Module.

   b. Undeploy or delete the ApplicationEngineISRAServlet Web Application Module.

   JBoss:

   No action to be performed.

3. Navigate to the /_uninstISRA folder under the ISRA Servlet installation location. The default location is:

   UNIX - /opt/

   Windows - C:\Program Files\

4. Run the uninstall program:

   UNIX - filenet_ae_israservlet_setup_uninstall.bin

   Windows - filenet_ae_israservlet_setup_uninstall.exe

   NOTE For Windows, you can also use Add/Remove Programs from the Control Panel to remove the IBM FileNet Application Engine ISRA Servlet.

5. Navigate to the FileNet directory. If there is no other IBM FileNet software installed under this directory, delete the FileNet directory. If there is some other IBM FileNet software installed under this directory, delete only the ApplicationEngineISRAServlet subdirectory.

6. Delete the following temporary working folders for the Application Engine ISRA Servlet:

   WebSphere 5.*:

   ```
   <WAS_Home>\WebSphere\AppServer\installedApps\<servername>\ApplicationEngineISRAServlet.ear\
   ```

   WebSphere 6.*:

```
<WAS_Home>\WebSphere\AppServer\profiles\default\installedApps\<servername>\Applicat
ionEngineISRAServlet.ear\
```

JBoss:

```
<JBoss_Home>\server\default\deploy\ApplicationEngineISRAServlet.war\
```

```
<JBoss_Home>\server\default\work\MainEngine\localhost\ApplicationEngineISRAServlet
```

WebLogic:

No action to be performed.

Appendixes

This appendixes section contains the following major topics:

IBM FileNet P8 Port Numbers

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

Content Engine Ports	
WEBDAV Clients / SSL	80 / 443
LDAP / SSL	389 / 636
Application Engine Apache (SOAP)	8008
MSSQL Server / Oracle / DB2	1433 / 1521 / 446
Process Engine (RMI)	32771
DOM, RPC, DTC, etc.(if CE is in DMZ outside firewall)	135

Process Engine Ports	
SMTP (E-mail Notification)	25
LDAP / SSL (LDAP Servers)	389 / 636
MSSQL Server / Oracle / DB2	1433 / 1521 / 446
Oracle Services for Microsoft Transaction Server (Windows)	2030
Process Engine (RMI)	32771
PPM (RMI)	32771
TMS	32768 / TCP
COR	32769 / TCP
NCH	32770 / UDP
fn_snmpd	161 / UDP
fn_trapd	35225 / UDP
SNMPD SMUX (AIX only)	199 / TCP
Rules Engine	32774 (TCP/IP)
Component Manager (Event Port)	32773
Process Engine to Extensible Authentication Communications	32776

Application Engine Ports	
WebSphere / WebSphere SSL	9080 / 443
WebLogic / WebLogic SSL	7001 / 7002
JBoss / JBoss SSL	8080 / 8443
Tomcat / Tomcat SSL	8080 / 8443
Oracle Application Server / Oracle Application Server SSL	(UNIX) 7777, (Windows) 80 / 443
Sun Java Application Server / Sun Java Application Server SSL	8080 / 8181
Content Engine Apache (SOAP)	8008
Process Engine (RMI)	32771

NOTE No additional port is required for the Process Configuration Console Java applet.

Rendition Engine Ports	
Liquent / Print Server on Local Port 1	Program Files\Common Files\Liquent\liquent.xml
Liquent / Print Server on Local Port 2	Program Files\Liquent\ Vista\ESPS.PS
Liquent notify port	2868
Liquent event port	2869
Liquent admin port	2870
MSSQL Server / Oracle	1433 / 1521
Web Content Manager	5000

Process Analyzer Ports	
Registry Port	32771
Data Port	32772
Database Port	1433

Process Simulator Ports	
Process Analyzer	32772
Registry	32771
Database Port	1433
Return	0 (anonymous)

System Manager Ports	
Listener (first)	32775
Listener (subsequent)	OS defined

Content Federation Services for Image Services Ports	
tms	32768 / TCP
cor	32769 / TCP
nch	32770 / UDP
fn_snmpd	161 / UDP
snmp trap	162 / UDP
fn_trapd	35225 / UDP
Native default SNMP port (HP only)	8000 / UDP
FileNet specific SNMP port (HP and Solaris only)	8001 / UDP
Migration notify	anonymous

Content Federation Services for Content Services and NTFS Ports	
MSSQL Server / Oracle / DB2	1433 / 1521 / 446
IICE Session Pool server and Single Sign-On server	1250
II CE RMI Bridge	1251

NOTE On UNIX platforms, Image Services port assignments are made in the /etc/services file. For more information, see the *IBM FileNet P8 Content Federation Services for Image Services Guidelines*.

Set Up Oracle tablespaces manually

If your database engine is Oracle, you need to set up a user as well as a permanent and a temporary tablespace for each object store in Content Engine. This section shows how to set up these users and tablespaces manually via the Oracle SQL commands, as in the following examples. There is also an example of how to edit the **listener.ora** file.

NOTE Refer to for restrictions and recommendations regarding tablespace names and sizes.

To create the user and tablespaces for a Content Engine object store

The following two examples, for Windows and UNIX, show how to create permanent and temporary tablespaces for a user named *test1* using SQL commands, assuming that your Oracle database is named *orcl*.

Windows:

```
DROP TABLESPACE test1 INCLUDING CONTENTS;
CREATE TABLESPACE test1 LOGGING
DATAFILE '%ORACLE_HOME%\oradata\orcl\test1.dbf'
SIZE 200M REUSE
AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED EXTENT
MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO;

DROP TABLESPACE temptest1 INCLUDING CONTENTS;
CREATE TEMPORARY TABLESPACE temptest1
TEMPFILE '%ORACLE_HOME%\oradata\orcl\temptest1.dbf'
SIZE 400M REUSE
AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED EXTENT
MANAGEMENT LOCAL;

DROP USER test1 CASCADE;
CREATE USER test1 PROFILE "DEFAULT"
IDENTIFIED BY test1
DEFAULT TABLESPACE test1
TEMPORARY TABLESPACE temptest1
ACCOUNT UNLOCK;
GRANT "CONNECT" TO test1;
GRANT "RESOURCE" TO test1;
```

UNIX:

```
DROP TABLESPACE test1 INCLUDING CONTENTS;
CREATE TABLESPACE test1 LOGGING
DATAFILE '$ORACLE_HOME/oradata/orcl/test1.dbf'
SIZE 200M REUSE
AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED EXTENT
MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO;

DROP TABLESPACE temptest1 INCLUDING CONTENTS;
CREATE TEMPORARY TABLESPACE temptest1
TEMPFILE '$ORACLE_HOME/oradata/orcl/temptest1.dbf'
SIZE 400M REUSE
AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED EXTENT
MANAGEMENT LOCAL;
```

```
DROP USER test1 CASCADE;
CREATE USER test1 PROFILE "DEFAULT"
IDENTIFIED BY test1
DEFAULT TABLESPACE test1
TEMPORARY TABLESPACE temptest1
QACCOUNT UNLOCK;
GRANT "CONNECT" TO test1;
GRANT "RESOURCE" TO test1;
```

To edit the listener.ora file

To manually update the **listener.ora** file (for example, to change the database name), refer to the following example, where *sunblock* is the dbname and *BLK* is the ORACLE_SID.

```
LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS_LIST =
        (ADDRESS = (PROTOCOL = TCP)(HOST = vwnetra1.filenet.com)(PORT = 1521))
      )
    )
  )

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = sunblock)
      (ORACLE_HOME = C:\oracle\ora92)
      (SID_NAME = BLK)
    )
  )
```

Process Engine SQL Scripts (Oracle databases only)

Process Engine Setup prompts for the Oracle sys password near the beginning and the end of the installation. The password is required to run the following SQL scripts (the first four scripts listed in the table run near the beginning of installation, the last script runs near the end).

Script Name	Action
pe_install_scripts.sql	A wrapper script that executes the following scripts: pe_filenet_site.sql, pe_create_stored_procedures.sql, and pe_grant_sp_permissions.sql. The pe_install_scripts.sql script generates an Oracle output spool file. After the script completes, Process Engine Setup scans the output file for errors.
pe_upgrade_scripts.sql	A wrapper script that executes the following scripts: pe_create_stored_procedures.sql, and pe_grant_sp_permissions.sql. The pe_upgrade_scripts.sql script generates an Oracle output spool file. After the script completes, Process Engine Setup scans the output file for errors.
pe_filenet_site.sql	Creates the database users for FileNet P8. See "Changes made by pe_filenet_site.sql and pe_setup_users_defaults.sql" on page 370 for details.
pe_create_stored_proce dures.sql	Creates a number of stored procedures. See "Changes made by pe_create_stored_procedures.sql and pe_grant_sp_permissions.sql" on page 371 for details.
pe_grant_sp_permission s.sql	Executes grants and creates synonyms for stored procedures. See "Changes made by pe_create_stored_procedures.sql and pe_grant_sp_permissions.sql" on page 371 for details.
pe_setup_users_defaults .sql	Sets user tablespace defaults and privileges for FileNet P8 users. See "Changes made by pe_filenet_site.sql and pe_setup_users_defaults.sql" on page 370 for details.

All the scripts are located at the root of the Process Engine installation CD. Process Engine Setup cannot complete until all these scripts have run successfully. If an error message indicates that any of the scripts did not run, you must resolve the errors before proceeding; see the *IBM FileNet P8 Platform Troubleshooting Guide* for further information.

Changes made by pe_filenet_site.sql and pe_setup_users_defaults.sql

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

FileNet DB user created	Granted Permissions/ privileges/roles	Initial password	Can delete post-install?	Default and temp Tablespace privileges***
f_sw	Connect, resource Select on sys.dba_users Select on sys.dba_tablespaces Create public synonym Drop public synonym	filenet*	No	Default tablespace set Temp tablespace set Quota 0 on system Quota unlimited on default tablespace Quota unlimited on temp tablespace
f_maint	DBA role	change$this_obnoxiou$_password	Yes	
f_operator	Connect	filenet**	Yes	
f_sqi	Connect, resource Create public synonym Drop public synonym	filenet	Yes	Default tablespace set Temp tablespace set Quota 0 on system Quota unlimited on default tablespace Quota unlimited on temp tablespace
f_open	Connect, resource	filenet	Yes	
f_cso	Connect, resource	filenet	Yes	

* Changed automatically during Process Engine software installation from *filenet* to an internal secret password.

** Manually changed after installation with set_f_maint_pw tool, as described in each "Install Process Engine <Platform>" section of this guide.

*** Default and temp tablespace names are set during installation. These names are used to set db user privileges.

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	Displays text of a specified ORA error number. Calls SQL stored procedure fn_errortxt to get the text.	Execute to public	fn_error
fn_oraversion	f_sw	Displays version number of Oracle RDBMS. Calls SQL Stored procedure fn_oraversiontxt.	Execute to public	fn_oraversion
fn_errortxt	f_sw	Gets and returns the message text of a specified ORA SQL Error Code.	Execute to public	fn_errortxt
fn_oraversiontxt	f_sw	Gets and returns the version number of the Oracle RDBMS.	Execute to public	fn_oraversiontxt

IBM FileNet P8 Database Character Sets

The table below lists the character sets supported for the FileNet P8 database components.

RDBMS	Character sets supported in the regular character set (via varchar and char data types)	Character sets supported in the **National character set** (via nvarchar, nchar, and graphics data types)	Character set utilized by CE	Character set utilized by PE
Oracle 9i	All Unicode (except for AL16UTF16) and non-Unicode character sets	AL16UTF16 (aka UCS-2)	Regular character set AL32UTF8 required	Regular character set (Oracle's AL32UTF8 Unicode character set or other single/ multi-byte character sets)
Oracle 10g	All standard Oracle character sets AL32UTF8 Unicode character sets	Not used by FileNet P8	Regular character set AL32UTF8 required	Regular character set
MS SQL Server	Only non-Unicode code pages are supported here	UCS-2 (Generically called Unicode on SQL Server)	Unicode/National character set only	Regular character set only
DB2	UTF-8 and all non-Unicode character sets	UCS-2	National character set only	Regular character set only

Additional Oracle character set information

The Oracle database character set you choose depends on whether the database is shared or dedicated.

• The required character set for a database dedicated to Content Engine or shared with Process Engine is AL32UTF8 (Unicode 3.1 UTF-8 Universal character set).

- If the database is dedicated to Process Engine, choose from among the supported character sets listed in the following table.

Description	Character set
Unicode 3.1 UTF-8 Universal character set	AL32UTF8
Western European	(UNIX) WE8ISO8859P1 or WE8ISO8859P15 (Windows) WE8MSWIN1252
Eastern European	EE8ISO8859P2
South European	SE8ISO8859P3
Northern & Northeastern Europe	NEE8ISO8859P4
Latin/Cyrillic	CL8ISO8859P5
Latin/Arabic	AR8ISO8859P6
Latin/Greek	FL8ISO8859P7
Latin/Hebrew	IWISO8859P8
Western European & Turkish	WEISO8859P9
North European	NE8ISO8859P10
ASCII 7-bit American	US7ASCII

Be aware of the special NLS_LANG settings for character sets and locale on Oracle Client machines. Consider the following:

- You must ensure that the NLS_LANG Oracle environment variable on an Oracle Client machine matches the character set/locale of the client 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 (and/or Content Engine), you do not need to override the registry value with the user environment variable. The default NLS_LANG value is adequate for either a Unicode (e.g., AL32UTF8) and non-Unicode (e.g., WE8MSWIN1252) database character set.

- Under UNIX, the Oracle Client installer does not automatically set the NLS_LANG (as it does under Windows). For this reason, after you have installed Process Engine on its server, you must manually set the locale and character set value on each UNIX Oracle Client machine from which users will access Process Engine.

- If the database uses a non-Unicode character set (e.g., WE8MSWIN1252), you can make the NLS_LANG value on the Oracle Client machine match the character set of the database by choosing the appropriate database character set during database creation. For example, when the client operating system locale is American ANSI 1252, then you can designate the WE8MSWIN1252 character set when you create the database. The Windows Oracle Client install will set NLS_LANG to be AMERICAN_AMERICA.WE8MSWIN1252 because the client operating system locale is American ANSI 1252. Under UNIX, you would manually set this value.

- You set the NLS_LANG value manually on Oracle Client machines as follows:

- – (UNIX) Add NLS_LANG to the shell environment login files for each user who will be logging on to the machine to run FileNet P8 software.

- – (Windows) Set/modify the value of the NLS_LANG key via System Properties in the Control Panel for each user who will be logging on to the machine to run FileNet P8 software.

Additional DB2 character set information

Content Engine requires a unicode (UTF-8) database. Process Engine will support the UTF-8 code set, code page 1208. Process Engine will also support all other single-byte character sets, for example:

Code Set	Code Page #
ISO8859-15	923
ISO8859-1	819

Configure an IBM FileNet P8 environment for Windows Server 2003 SP1 or R2

If you plan to install Microsoft Windows Server 2003 Service Pack 1 (SP1) or Release 2 (R2) in an IBM FileNet P8 environment, you must run the following procedure on the server(s) where the IBM FileNet P8 components are configured.

At least one Windows domain (2000 or 2003) must be configured for the IBM FileNet P8 environment, regardless of the authentication provider (Windows, Sun, or Novell) that is utilized.

NOTES

• For Windows Server 2003 SP1 or R2 servers where IBM FileNet P8 Content Engine components will be installed, Microsoft Distributed Transaction Coordinator (MSDTC) and COM+ must be properly enabled and configured; otherwise, the Content Engine components will not run correctly. For more information, see "Configure Content Engine and SQL Servers for Windows 2003" on page 46.

• If MSDTC and COM+ access is not enabled, object store creation will fail when loading the Content Engine Add-ons.

• To install the MSDTC or COM+ components, you will need the Windows Server 2003 media.

• The boot drive partition where Windows Server 2003 is installed must be NTFS.

• If IBM FileNet P8 Content Engine is already installed, you must first shut down the Content Engine services before making these changes (i.e., Content Engine Content Cache Service, Content Engine File Store Service, and Content Engine Object Store Service). You can shut down these services using the Windows Services MMC snap-in.

• To install Process Engine onto a machine that is running Windows Server 2003 SP1 or R2, we recommend you use the 3.5.0a update of the Process Engine. If you use the earlier 3.5.0 release instead, you will have to remove the Windows Service Pack or Release before you install Process Engine, as indicated later in this appendix. Contact your IBM representative to get a 3.5.0a Process Engine update CD.

• To install Content Engine 3.5.0 and Process Engine 3.5.0 onto a single Windows Server 2003 machine, you must do so prior to applying Windows Server 2003 SP1 or R2. However, as of Process Engine 3.5.0a refresh, you will be able to install this IBM FileNet software onto a machine where Windows Server 2003 SP1 or R2 is already installed.

Windows Server 2003 SP1 or R2 and IBM FileNet P8

Windows Server 2003 SP1 and R2 include a number of changes which affect the IBM FileNet P8 Content Engine, primarily the default settings which, if left unchanged, prevent Content Engine from working properly. Specifically, the default settings and changes in SP1 and R2 that affect the operation of IBM FileNet P8 are in the following areas:

• DTC Network Security

• DCOM Security

For general information on Windows Server 2003 SP1, go to the associated Microsoft download site and locate the BookOfSP1Doc.doc file (URL: http://www.microsoft.com/downloads/details.aspx?FamilyId=C3C26254-8CE3-46E2-B1B6-3659B92B2CDE&displaylang=en). Note that this URL may change in the future. If it does, search the Microsoft Web site for all SP1 related documents.

For general information on Windows Server 2003 R2, go to the associated Microsoft download site and locate the link for What's New in Windows Server 2003 R2 (URL: http://www.microsoft.com/ windowsserver2003/default.mspx). Note that this URL may change in the future. If it does, search the Microsoft Web site for all R2 related documents.

To understand how Windows Server 2003 SP1 or R2 affects IBM FileNet P8, it is important to understand how IBM FileNet P8 components communicate using MSDTC and COM. Then, in order for Content Engine to function appropriately, you must evaluate any Windows 2003 Server SP1 or R2 servers in your IBM FileNet P8 environment that are running any of the following:

- Content Engine Object Store Service

- Content Engine File Store Service

- Content Engine Content Cache Service

- Microsoft SQL Server

Note that changes are not needed on Windows Server 2003 SP1 or R2 servers running any of the following:

- Windows Active Directory server

- Sun One or eDirectory LDAP server

- Oracle 9i database servers

- IBM FileNet P8 Enterprise Manager

- Workplace clients

- IBM FileNet P8 Java API clients

- Content Engine Web Services (CEWS) clients

- Process Engine Web Services (PEWS) clients

- Custom Content Engine COM API clients

- Application Engine

- Rendition Engine

To properly configure MSDTC and COM+ components, you must use the Component Services MMC snap-in.

To start the Component Services MMC snap-in

1. Click **Start > Settings > Control Panel > Administrative Tools > Component Services**.

2. Expand the **Component Services** and **Computers** containers.

3. Right-click the **My Computer** container and select **Properties.**

   You should then see the **My Computer** Properties dialog. This dialog contains the **MSDTC** and **COM Security** tabs. You will use the properties in these tabs to configure the MSDTC and COM Security components.

Microsoft Distributed Transaction Coordinator (MSDTC)

This topic shows you where to modify MSDTC settings, defines those settings, and identifies the values required for your IBM FileNet P8 environment.

WARNING If Content Engine is already installed, you must first shut down the Content Engine services before making these changes (i.e., Content Engine Content Cache Service, Content Engine File Store Service, and Content Engine Object Store Service). You can do this via the Windows Services MMC snap-in.

In order to modify the MSDTC Network Security settings, certain fields on the MSDTC Security settings properties page have to be changed. To see this page, use the following procedure.

NOTE IBM recommends restarting the server after the MSDTC changes have been made.

To set the MSDTC Security Configuration settings

1. Start the Component Services MMC snap-in if it is not already running.

2. Expand the **Component Services** and **Computers** containers.

3. Right-click the **My Computer** container and select **Properties.**

4. Select the **MSDTC** tab.

5. Click the **Security Configuration** button.

6. Apply the appropiate settings for your server, based on your IBM FileNet P8 server configuration. For configuration instructions, see "MSDTC Network Security settings for IBM FileNet P8" on page 378.

NOTE The following components are not relevant to IBM FileNet P8, and therefore, do not require changes to be made to the MSDTC configuration settings: Client and Administration (Allow Remote Clients & Allow Remote Administration), Enable Transaction Internet Protocol (TIP) Transactions and MSDTC Logon Account.

The MSDTC Security settings properties page features the following fields:

Network MSDTC Access

Determines whether MSDTC on the local computer is allowed to access the network.

Allow inbound

Allows a distributed transaction that originates from a remote computer to run on this computer.

Allow Outbound

Allows the local computer to initiate a transaction and run it on a remote computer.

Mutual Authentication Required

Adds support for mutual authentication in future versions and is the highest secured communication mode. In the current version, it is functionally equivalent to the **Incoming Caller Authentication Required** setting. This is the recommended transaction mode for servers running Windows Server 2003 SP1 or R2.

NOTE Only Windows Server 2003 SP1 or R2 and Windows XP SP2 support this feature, so you should use this only if you know that the MSDTC on the remote computer runs either Windows Server 2003 SP1 or R2, or Windows XP SP2.

Incoming Caller Authentication Required

Requires the local MSDTC to communicate with a remote MSDTC using only encrypted messages and mutual authentication. This setting is recommended for servers running Windows Server 2003 SP1 or R2 that are operating in a cluster.

NOTE Only Windows Server 2003 SP1 or R2 and Windows XP SP2 support this feature, so you should use this only if you know that the MSDTC on the remote computer runs either Windows Server 2003 SP1 or R2, or Windows XP SP2.

No Authentication Required

Provides system compatibility between previous versions of the Windows operating system. This setting should be used if the MSDTC on the remote computer runs Windows 2000 or Windows Server 2003 without SP1 or R2.

Enable XA Transactions

Enables distributed transactions with XA features. This setting must be used if you are using DB2 as your DBMS, and CE is running on Windows Server 2003 SP1 or R2.

How IBM FileNet P8 is affected

The following components are involved in distributed transactions and use the MSDTC:

- Content Engine Object Store Service

- File Store Service

- Microsoft SQL Server

The Windows Server 2003 SP1 or R2 changes affect IBM FileNet P8 only if distributed transactions use the network. The Content Engine Object Store Service is the only IBM FileNet P8 component that initiates distributed transactions using the MSDTC, where it initiates outbound transactions. In addition, this service can enlist the File Store Service and Microsoft SQL Server in a distributed transaction, where these components accept inbound transactions.

The Authentication Required settings apply when processes on two or more servers are involved in a distributed transaction, coordinated by MSDTC. To be able to use a setting other than No Authentication Required, the servers participating in a distributed transaction must be running Windows Server 2003 SP1 or R2 in the same domain or in separate domains with trust relationships. Windows Server 2003 SP1 or R2 servers do not need to have the same Authentication Required settings.

If **all** of the components involved in a distributed transaction are to run on the same server, then IBM FileNet P8 will **not** use Network MSDTC Transactions and the MSDTC Network Security Settings will have no effect.

If **any** of the components involved in a distributed transaction are to run on a separate server, then IBM FileNet P8 **will** use Network MSDTC Transactions and changes must be made to the servers running Windows Server 2003 Server SP1 or R2.

MSDTC Network Security settings for IBM FileNet P8

If your IBM FileNet P8 environment will use Network MSDTC Transactions, the following changes must be made to the MSDTC configuration settings for identified components in your environment:

NOTE If you are using Windows Firewall to protect the computers in your organization, you must add MSDTC into the exception list in the Windows Firewall settings.

MSDTC Network Security Settings

According to the configuration of your IBM FileNet P8 environment, use the conditions specified in the following table to make the indicated MSDTC changes on the identified servers.

Server	All other FileNet P8/ SQL services are located on the same physical machine	All other FileNet P8/ SQL servers are running Windows Server 2003 SP1 or R2	At least one other FileNet P8/SQL server is running Windows Server 2003	At least one other FileNet P8/SQL server is running Windows Server 2000
Object Store Server running Windows Server 2003 SP1 or R2	n/a	Allow Outbound and Mutual Authentication Required	Allow Outbound and No Authentication Required	Allow Outbound and No Authentication Required
Object Store Server running Windows Server 2000 or 2003	n/a	n/a	n/a	n/a
File Store Server running Windows Server 2003 SP1 or R2	n/a	Allow Inbound and Mutual Authentication Required	Allow Inbound and No Authentication Required	Allow Inbound and No Authentication Required
File Store Server running Windows Server 2000 or 2003	n/a	n/a	n/a	n/a
SQL Server running Windows Server 2003 SP1 or R2	n/a	Allow Inbound and Mutual Authentication Required	Allow Inbound and No Authentication Required	Allow Inbound and No Authentication Required
SQL Server running Windows Server 2000 or 2003	n/a	n/a	n/a	n/a

NOTES

• Specification of the **Allow Inbound** and **Allow Outbound** options represent the minimum required settings.

• The maximum permissible setting is achieved by setting the **Authentication Required** option to Mutual. However, note that IBM FileNet P8 will work with servers which have the **Authentication Required** option set to No.

COM Security

This topic shows where to modify COM security settings, defines those settings, and identifies the values required for your FileNet P8 environment.

In order to modify the COM Network Security settings, certain fields on the COM Security settings properties page have to be changed. To see this page, use the following procedure.

To set the COM Security settings

1. Start the Component Services snap-in if it is not already running.

2. Expand the **Component Services** and **Computers** containers.

3. Right-click the **My Computer** container and select **Properties.**

4. Select the **COM Security** tab.

5. Depending on the FileNet P8 server configuration, make the appropriate settings for your server. For more information, see the recommendations identified in "COM Security permissions for IBM FileNet P8" on page 384.

The COM Security settings properties page features the following fields:

COM Security Limits

The COM security limits control access to all call, activation, or launch requests on the computer. Every call, activation, or launch of any COM application on the computer is checked against these access limits. If the access check fails, the call, activation, or launch request will be denied.

The COM security limits provide a minimum security standard that must be passed, regardless of the settings of the specific COM application.

Local and Remote permissions

Local and Remote permissions distinguish the COM access rights based on distance:

• Local permissions allow or deny the ability of users on the local machine to call, activate, or launch COM applications.

• Remote permissions allow or deny the ability of users on remote machines to call, activate, or launch COM applications.

COM Launch permissions

Launch permissions control authorization to start a COM application during COM activation if the application is not already running.

COM Activation permissions

Activation permissions control authorization to create a COM object from a COM application. Unless it is already running, the COM application will be started if the user making the COM activation call has activation and launch permissions.

COM Access permissions

Access permissions control authorization to make calls to COM objects in a running COM application.

In releases prior to Windows Server 2003 SP1, the access permissions included activation permissions. With the release of SP1, COM activation permissions are now offered as a separate set of permissions.

How IBM FileNet P8 is affected

The COM security settings described in this section intentionally duplicate some existing permission settings. With these settings, Content Engine should continue to function as expected, even if Microsoft should reduce the set of default COM security settings at some point in the future.

COM client applications

IBM FileNet P8 applications which are Content Engine COM API client applications make COM calls to the Content Engine Object Store Service only. Users running these COM API client applications need COM permissions in order to call or activate the service. The COM security settings for these users are made on Windows Server 2003 SP1 or R2 servers running the service.

The Content Engine COM API client applications include:

- IBM FileNet P8 Enterprise Manager

- Custom Content Engine COM API clients

- Apache web server

Note that permissions are not granted to a user who logs in to IBM FileNet P8. Rather, permissions are granted or denied to the users running the FileNet P8 COM clients (or to the groups to which they belong). The following examples are provided to clarify this distinction.

Example 1: IBM FileNet P8 Workplace

Bob logs on to his Windows workstation and accesses the FileNet P8 Workplace sign-in page. Bob is a FileNet P8 Records Manager administrator and signs in to Workplace with the user name RMAdmin.

All the calls from Workplace go through the Apache web server. Apache makes COM calls to the Content Engine Object Store Service. Apache is set to run as the FileNet P8 Apache user, so the FileNet P8 Apache user must have COM permissions on the server running the Content Engine Object Store Service. Neither Bob nor the RMAdmin user needs any COM permissions.

Example 2: IBM FileNet P8 Enterprise Manager

Jane logs on to her Windows workstation and starts the IBM FileNet P8 Enterprise Manager. She logs in to the IBM FileNet P8 Enterprise Manager with the user name CEAdmin. CEAdmin is both a GCD administrator and an Object Store administrator.

The IBM FileNet P8 Enterprise Manager makes COM calls to the Content Engine Object Store Service. The IBM FileNet P8 Enterprise Manager is running as the user Jane. All calls to the Content Engine Object Store Service use Jane's credentials, so Jane must have COM permissions on the server running the Service. The CEAdmin user does not need any COM permissions.

As you can see, it does not matter which user name is used to access IBM FileNet P8. Rather, COM permissions are needed by the Windows user who is running the Content Engine COM API client application.

COM server applications

COM security settings are made on Windows Server 2003 SP1 servers running FileNet P8 services.

The COM server applications include:

- Content Engine Object Store Service

- Content Engine File Store Service

- Content Engine Content Cache Service

Acting as both COM servers and COM clients, the Content Engine services make COM calls to each other. Therefore, the Content Engine services need COM permissions to call or activate each other. Permissions are granted to the users which these services run as (usually the Content Engine Servers group). The COM security settings for these users are made on all Windows Server 2003 SP1 or R2 servers running any of the Content Engine services.

COM Permissions

This section defines the users or groups for each FileNet P8 COM client application:

- Content Engine Servers group - This group is made up of the `FNCE_<machine_name>` accounts which are created during installation.

- *<Local Users>* and *<Remote Users>* - Windows user/group accounts that access the Content Engine Object Store Service using the Content Engine COM API.

- FileNet P8 Apache user - Service user for the Apache2 service.

- *<Local Administrators>* and *<Remote Administrators>* - Windows user/group accounts which access the Content Engine Object Store Service using the Content Engine COM API, and which were defined as GCD administrative accounts during Content Engine installation.

The following diagram identifies the COM calls and activations made by each component and the users making the COM calls. The users are shown on the Windows Server 2003 SP1 or R2 server where they are to be granted COM permissions.

Remote clients
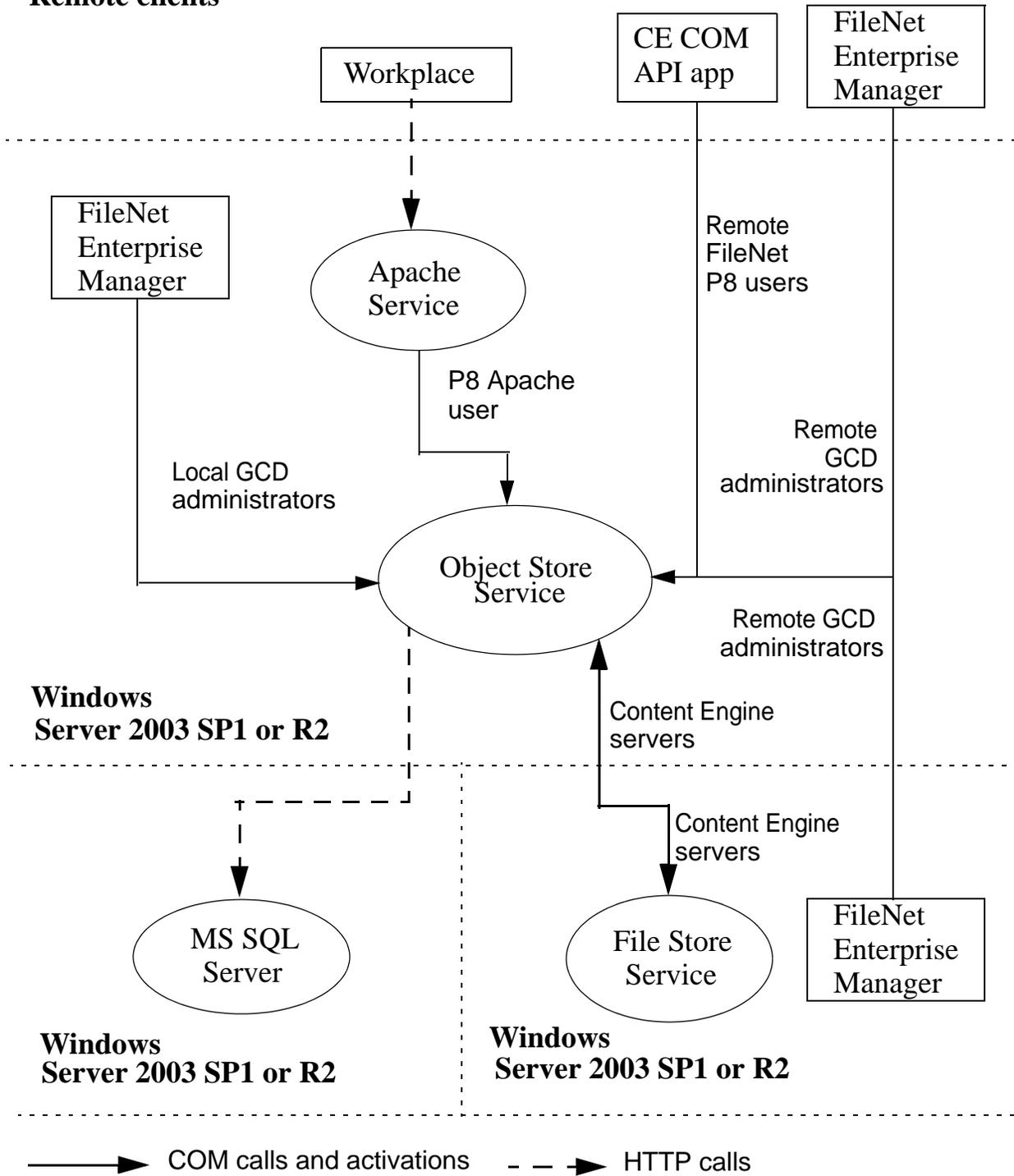
Figure 1: COM Calls

COM Security permissions for IBM FileNet P8

This section identifies the recommended COM Security settings that should be made for each FileNet P8 server in your environment.

COM Security Settings

	Access Permission		Launch and Activation Permission	
	Limit	**Default**	**Limit**	**Default**
Content Engine Object Store Server and Content Engine Content Cache Service				
Content Engine Servers group A group that includes users like *<FNCE_machinename>*	Allow Local / Remote Access	n/a	Allow Local / Remote Activation	Allow Local / Remote Activation
<Local Users> Windows user/group accounts that used on the local machine. For example, administrator (local machine)	Allow Local Access	n/a	Allow Local Activation	Allow Local Activation
<Remote Users> Windows user/group accounts used on the remote machine. For example, administrator (remote machine)	Allow Remote Access	n/a	Allow Remote Activation	Allow Remote Activation
<Local Administrators> GCD administrative account (also a Windows user) used on the local machine, such as CEAdmin.	Allow Local Access	n/a	Allow Local Activation	Allow Local Activation
<Remote Administrators> GCD administrative accounts (also a Windows user) used on the **remote** machine, such as CEAdmin.	Allow Remote Access	n/a	Allow Remote Activation	Allow Remote Activation
FileNet P8 Apache user The Windows account that logs on and runs the Apache2 service, for example, P8Apache.	Allow Local Access	n/a	Allow Local Activation	Allow Local Activation
Content Engine File Store Server				
Content Engine Servers group	Allow Local / Remote Access	n/a	Allow Local / Remote Activation	Allow Local / Remote Activation

NOTE There are no required COM Security permission settings for Microsoft Windows Server 2003 SP1 or

R2 servers running IBM FileNet P8 Remote Enterprise Manager, Microsoft SQL Server 2000 Database Server, Domain Controller with Active Directory, LDAP Server (Sun One or eDirectory), or other database servers.

COM Launch permissions

FileNet P8 component services should be directly stopped and started by administrators only and should not be started by a COM call from any user. The IBM FileNet P8 components were written to prevent themselves from being started by a COM call.

For added security, IBM recommends that all the users and groups defined above should be denied local and remote launch permissions. It is sufficient to apply these permissions to the Launch Permissions limits.

These permissions do not affect the use of IBM FileNet P8 Enterprise Manager or the Services tool to start COM servers or COM+ applications. Neither do they affect the auto-restart of the Content Engine services.

COM Activation permissions

All users of applications making COM activation calls need activation permissions on the COM server being activated (see the recommendations identified in "COM Security permissions for IBM FileNet P8" on page 384). The same permissions should be applied to the default activation permissions, as well as the activation permissions limits.

COM Access permissions

All users of applications making COM calls need access permissions on the COM server being called (see the recommendations identified in "COM Security permissions for IBM FileNet P8" on page 384). The IBM FileNet P8 components have security built into all of their COM interfaces which overrides any settings in the default access permissions. Permissions to make COM calls to IBM FileNet P8 components need only be applied to the access permissions limits.

Local and Remote COM permissions

Local and remote COM permissions should be granted as follows:

- If the Content Engine Services are running on more than one server, the Content Engine Servers group will require remote permissions on each Windows Server 2003 SP1 or R2 running a Content Engine service.

- If more than one Content Engine Service is running on one Windows Server 2003 SP1 or R2, the Content Engine Servers group will require local permissions on that server.

- If the IBM FileNet P8 Enterprise Manager or other Content Engine COM API admin tool is being used on a machine remote from the Content Engine Object Store Service, then the `<P8 Adminis- trators>` will require remote permissions on the Content Engine Object Store Service server.

- If the IBM FileNet P8 Enterprise Manager or other Content Engine COM API admin tool is being used on the same machine as the Content Engine Object Store Service, then the `<P8 Adminis- trators>` will require local permissions on the Content Engine Object Store Service server.

The Apache2 service makes COM calls to the Content Engine Object Store Service only. Because these two services must run on the same server, the FileNet P8 Apache user will require local permissions only.

Examples of IBM FileNet P8 systems on Windows Server 2003 SP1

In the following examples, the IBM FileNet P8 systems have Content Engine and associated components running on servers that have been upgraded to Windows Server 2003 SP1 or R2. The upgraded servers include the Domain Controller, LDAP server, the database management server, any COM API-based

application servers (including a remote IBM FileNet Enterprise Manager), and the Content Engine servers which include the Object Store Service, File Store service, and the Content Cache Service.

In this example environment, you would need to make the changes identified in this section on each of these servers in order for Content Engine to function properly.

NOTE For other environments, refer to the recommended settings identified in and for additional configuration guidelines and server-specific information.

To configure the Content Engine Object Store and Content Cache Service Server

Configure the MSDTC Network and COM Security settings for the Content Engine Object Store and Content Cache Service Server as follows:

MSDTC Network Security settings

According to your configuration, use the conditions specified in the following table to make the indicated MSDTC changes.

	All other FileNet P8/ SQL services are located on the same physical machine	**All other FileNet P8/ SQL servers are running Windows Server 2003 SP1 or R2**	**At least one other FileNet P8/SQL server is running Windows Server 2003**	**At least one other FileNet P8/SQL server is running Windows Server 2000**
Windows Server 2003 SP1 or R2	n/a	Allow Outbound and Mutual Authentication Required	Allow Outbound and No Authentication Required	Allow Outbound and No Authentication Required
Windows Server 2000 or 2003	n/a	n/a	n/a	n/a

COM Security Settings

	Access Permission		Launch and Activation Permission	
	Limit	Default	Limit	Default
Content Engine Servers group	Allow Local / Remote Access	n/a	Allow Local / Remote Activation	Allow Local / Remote Activation
<Local Users>	Allow Local Access	n/a	Allow Local Activation	Allow Local Activation
<Remote Users>	Allow Remote Access	n/a	Allow Remote Activation	Allow Remote Activation
<Local Administrators>	Allow Local Access	n/a	Allow Local Activation	Allow Local Activation
<Remote Administrators>	Allow Remote Access	n/a	Allow Remote Activation	Allow Remote Activation
FileNet P8 Apache user	Allow Local Access	n/a	Allow Local Activation	Allow Local Activation

To configure the Content Engine File Store Server

Configure the MSDTC Network and COM Security settings for the Content Engine File Store Server as follows:

MSDTC Network Security settings

According to the configuration of your FileNet P8 environment, use the conditions specified in the following table to make the indicated MSDTC changes on the identified servers.

	All other FileNet P8/ SQL services are located on the same physical machine	All other FileNet P8/ SQL servers are running Windows Server 2003 SP1 or R2	At least one other FileNet P8/SQL server is running Windows Server 2003	At least one other FileNet P8/SQL server is running Windows Server 2000
Windows Server 2003 SP1 or R2	n/a	Allow Inbound and Mutual Authentication Required	Allow Inbound and No Authentication Required	Allow Inbound and No Authentication Required
Windows Server 2000 or 2003	n/a	n/a	n/a	n/a

COM Security Settings

	Access Permission		Launch and Activation Permission	
	Limit	**Default**	**Limit**	**Default**
Content Engine Servers group	Allow Local / Remote Access	n/a	Allow Local / Remote Activation	Allow Local / Remote Activation

NOTE You must give full permissions to the file store shared folder(s) for the Content Engine Servers, `FNCE_<CE_Machine_name>`, as well as to any GCD administrative accounts that will be used to create the remote file store(s).

To configure the Microsoft SQL Server 2000 Database Server

Configure the MSDTC Network Security settings for the Microsoft SQL Server 2000 Database Server as follows:

MSDTC Network Security settings

According to your configuration, use the conditions specified in the following table to make the indicated MSDTC changes.

	All other FileNet P8/ SQL services are located on the same physical machine	All other FileNet P8/ SQL servers are running Windows Server 2003 SP1 or R2	At least one other FileNet P8/SQL server is running Windows Server 2003	At least one other FileNet P8/SQL server is running Windows Server 2000
Windows Server 2003 SP1 or R2	n/a	Allow Inbound and Mutual Authentication Required	Allow Inbound and No Authentication Required	Allow Inbound and No Authentication Required
Windows Server 2000 or 2003	n/a	n/a	n/a	n/a

To configure the Process Engine server

No modifications are required for the Process Engine server in order for the software to function correctly when Windows Server 2003 SP1 or R2 is installed. However, to install Process Engine onto a Windows Server 2003 machine where SP1 or R2 is already installed, you must use the *Process Engine 3.5.0a* update CD. Follow the general procedures described in earlier installation or upgrade topics for Process Engine. Contact your IBM representative if you need a copy of the 3.5.0a Process Engine update.

NOTE If you use the earlier 3.5.0 *Process Engine* CD, you must first install the Process Engine onto a base Windows Server 2003 machine, and then apply Service Pack 1 or Release 2. If the Windows Service Pack or Release is already installed, remove it using **Control Panel > Add/Remove Programs** before you install Process Engine 3.5.0, and then reapply the Windows Service Pack or Release. **You will have to do this even if your site is already running Process Engine 3.0.0 on Windows Server 2003 SP1 or R2.**

Troubleshooting

See the *IBM FileNet P8 Platform Troubleshooting Guide* if you should have any problems. This document provides troubleshooting information on all aspects of the product.

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