IBM FileNet P8
Version 5.2.0

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

GC19-3932-00

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Note
Before using this information and the product it supports, read the information in "Notices" on page 91.

This edition applies to version 5.2.0 of IBM FileNet Content Manager (product number 5724-R81), version 5.2.0 of IBM Case Foundation (product number 5724-R76), and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

ibm.com and related resources

Product support and documentation are available from ibm.com.

Support and assistance

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

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

Information center

You can view the product documentation in an Eclipse-based information center that you can install when you install the product. By default, the information center runs in a Web server mode that other Web browsers can access. You can also run it locally on your workstation. See the information center at http://pic.dhe.ibm.com/infocenter/p8docs/v5r2m0/index.jsp.

PDF publications

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

See the following PDF publications Web sites:

Product	Web site
Product Documentation for FileNet P8 Platform	http://www.ibm.com/support/docview.wss?rs=86&uid=swg27021508

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

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

How to send your comments

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

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

Consumability survey

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

Contacting IBM

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

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- In the United States: 1-888-426-4343
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For more information about how to contact IBM, see the Contact IBM Web site at http://www.ibm.com/contact/us/.

Planning and preparing for FileNet P8 installation

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

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

"Performing the required installation preparation tasks" on page 23
To efficiently carry out the required installation preparation tasks, you must assign your staff to carry out the tasks that are organized by administrative role.

Planning the installation

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

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

"Overview of FileNet P8 component dependencies" on page 2
The relationships between FileNet P8 components create dependencies between the components. Understanding those relationships helps you plan the order of installation of those components.

"Installation scenarios" on page 13
Depending on how you plan to use your FileNet P8 system, you might make different choices in how you install the components. You can review the possible FileNet P8 environment scenarios to help you plan your installation process.

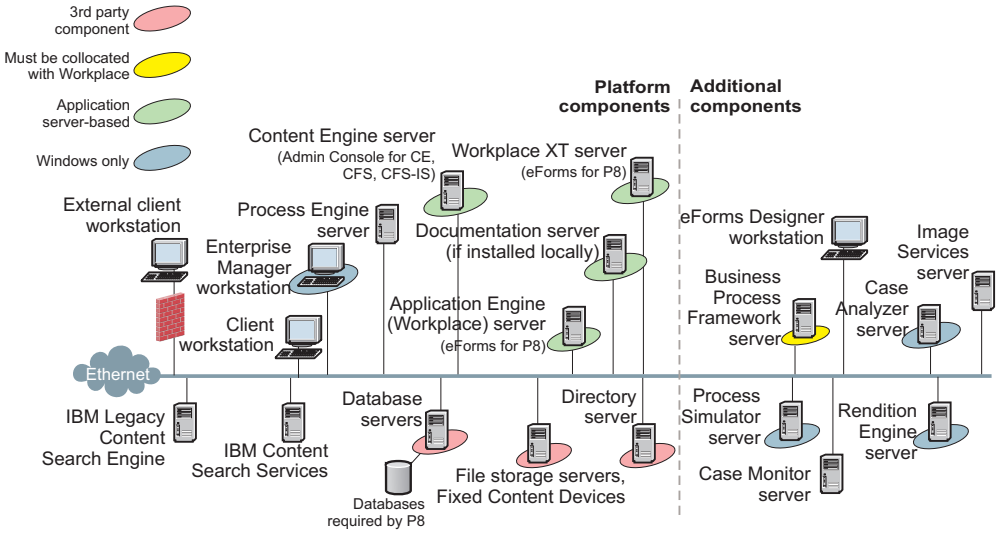
"Definition of installation roles" on page 19
The tasks in this guide and the rows in the Installation and Upgrade Worksheet are organized by administrative roles. Your organization might have different roles, and some of the responsibilities of listed roles will vary from those assigned by default in this documentation.

"Using the installation and upgrade worksheet" on page 21
The Installation and Upgrade Worksheet is a Microsoft Excel spreadsheet (`p8_worksheet.xls`). The worksheet describes the properties and parameters required to complete FileNet P8 installation, upgrade, and configuration programs, and provides a way to record the values you assign to these properties and parameters.

FileNet P8 Platform sample architecture

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

The following graphic shows just one of many possible configurations of a FileNet P8 Platform installation.



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

- Use this graphic for general informational purposes only. Consult this information center and the *IBM FileNet P8 Hardware and Software Requirements* for full information about collocation, prerequisites, supported platforms, and so on.
- Components listed in parentheses are available as part of the installation of that server.
- Installing a local information center on a documentation server is not required if you link to the online version of the information center on www.ibm.com.
- The graphic does not show components in a high availability or clustered configuration.
- For information about installing components on a single server, see "Single server scenario" on page 16.
- Not all additional components are shown. Check with your service representative for availability of other products.

Related concepts:

"Overview of installation types" on page 13
Before putting your FileNet P8 system into production, it is often a good idea to install it several times, with each installation fulfilling a different purpose.

"Overview of FileNet P8 component dependencies"
The relationships between FileNet P8 components create dependencies between the components. Understanding those relationships helps you plan the order of installation of those components.

Overview of FileNet P8 component dependencies

The relationships between FileNet P8 components create dependencies between the components. Understanding those relationships helps you plan the order of installation of those components.

To use the summary of component dependencies table, compare the components already in your environment to the components that you plan to install. Then review the summary of dependencies to see whether your environment already has the necessary elements or whether some are missing. You can ignore components that you do not plan to install if those components are not a prerequisite for a component that you want to install.

The following limitations apply to this summary:

- It provides general guidelines. Always check component documentation and the *IBM FileNet P8 Hardware and Software Requirements* before starting any installation.
- Information is at the component level; administrative tools are not included.
- Requirements for hardware configurations, Java™, and security are not listed.

Components listed in Table 1

- Content Platform Engine
- IBM Case Foundation
- IBM FileNet Application Engine
- Application Integration for IBM FileNet Workplace
- IBM FileNet Case Analyzer
- IBM Case Manager
- IBM FileNet Case Monitor
- FileNet Connector for Microsoft SharePoint Web Parts
- IBM Content Analytics with Enterprise Search
- IBM Content Classification
- IBM FileNet Content Federation Services
- IBM Content Management Interoperability Services for FileNet Content Manager
- IBM Content Navigator
- IBM Content Search Services
- IBM FileNet eForms for P8
- IBM Enterprise Records
- IBM FileNet Integration for Microsoft Office
- IBM FileNet Process Simulator
- IBM FileNet Rendition Engine
- FileNet Collaboration Services
- IBM System Dashboard for Enterprise Content Management
- IBM FileNet Workplace XT

The following conventions are used in the table:

- Application server described as Required means that the component requires an application server, in addition to any application servers that might be a part of other required components.
- Database described as Required means that the component must have its own database, in addition to any databases that might be a part of other required components.

Table 1. Summary of FileNet P8 component dependencies

Component	Description	Summary of dependencies and client file requirements
Content Platform Engine	Provides content management and capabilities. Also provides software services for managing all aspects of workflows, such as process execution, process routing, rules management, process simulation and modeling, and workflow analysis. Content Platform Engine must be the first component in every FileNet P8 installation. **System Overview** FileNet P8 System Overview > Architecture > FileNet P8 core components > Content Platform Engine **Installation documentation** Installing or upgrading FileNet P8 Platform > Installing a distributed FileNet P8 Platform system > Installing and configuring Content Platform Engine	**Directory server** Required. Content Platform Engine connects to the directory server to provide authentication and authorization for all FileNet P8 components. **Application server** Required. Content Platform Engine runs inside an application server. **Database** Required. Content Platform Engine connects to the global configuration database for configuration data and additional databases for object store and workflow data. **Component has its own client files?** Yes. **Component needs client files of other components after installation?** Yes. For example, client files are optionally needed for fixed content devices and for integration with other repositories.
IBM Case Foundation	Provides workflow features. **System Overview** FileNet P8 System Overview > Architecture > FileNet P8 core components > Content Platform Engine **Installation documentation** Installing or upgrading FileNet P8 Platform > Installing a distributed FileNet P8 Platform system > Installing and configuring Content Platform Engine	You must install IBM Case Foundation along with Content Platform Engine in order to get the license to use the workflow development tools and create new workflows. It also installs the IBM FileNet Case Analyzer server components. **Content Platform Engine** IBM Case Foundation must be installed on same server as Content Platform Engine. **Application server or database** IBM Case Foundation uses same application server and database as Content Platform Engine **Component needs client files of other components after installation?** No.

Table 1. Summary of FileNet P8 component dependencies (continued)

Component	Description	Summary of dependencies and client file requirements
IBM Content Search Services	Provides full-text search capability that can index Content Platform Engine string properties and document content which can then be accessed by custom applications. **System Overview** FileNet P8 System Overview > Architecture > FileNet P8 core components > Search **Installation documentation** Installing or upgrading IBM FileNet P8 Platform > Installing a distributed IBM FileNet P8 Platform system > Installing and configuring IBM Content Search Services	**Content Platform Engine** Must be available so that IBM Content Search Services can access and index content. **Application server or database** Not required. **Component needs client files of other components after installation?** No.
Application Engine	Provides platform for end-user document management web applications. Includes Workplace. **System Overview** FileNet P8 System Overview > Architecture > FileNet P8 core components > Application Engine **Installation documentation** Installing or upgrading FileNet P8 Platform > Installing a distributed FileNet P8 Platform system > Installing and configuring Application Engine	**Content Platform Engine** Content Platform Engine must be running to provide authentication and authorization services. **Application server** Required. Application Engine runs inside an application server. **Database** Not required. **Component has its own client files?** No. **Component needs client files of other components after installation?** Yes. Update Application Engine with Content Platform Engine client files.

Table 1. Summary of FileNet P8 component dependencies (continued)

Component	Description	Summary of dependencies and client file requirements
IBM FileNet Rendition Engine	Transforms documents into HTML or PDF formats. **System Overview** FileNet P8 System Overview > Architecture > FileNet P8 core components > Rendition Engine **Installation documentation** Installing additional FileNet P8 products > FileNet Rendition Engine installation and upgrade > Installing and configuring Rendition Engine	**Content Platform Engine** Required. **Application server** Not required. **Database** Required. IBM FileNet Rendition Engine requires a database for storing configuration and processing of rendering jobs. **Authoring applications** Must be installed before you can use IBM FileNet Rendition Engine for document rendering. **Component has its own client files?** No. **Component needs client files of other components after installation?** No.
IBM FileNet Workplace XT	Provides an end-user document management web application. Can be used instead of Application Engine. **System Overview** FileNet P8 System Overview > Architecture > FileNet P8 core components > Workplace XT **Installation documentation** Installing additional FileNet P8 products > FileNet Workplace XT installation and upgrade > Installing FileNet Workplace XT	**Content Platform Engine** Content Platform Engine must be running to provide authentication and authorization services. **Application server** Required. Workplace XT runs inside an application server. **Database** Not required. **Component has its own client files?** No. **Component needs client files of other components after installation?** Yes. Update Workplace XT with Content Platform Engine client files.

Table 1. Summary of FileNet P8 component dependencies (continued)

Component	Description	Summary of dependencies and client file requirements
IBM Enterprise Records	Provides robust records management features. **System Overview** FileNet P8 System Overview > Features > Records management **Installation documentation** Installing additional FileNet P8 products > IBM Enterprise Records Installation and Upgrade Guide > Installing IBM Enterprise Records	**Content Platform Engine** Required. **Workplace or Workplace XT** Required. **Application server** Required. IBM Enterprise Records runs inside an application server. **Database** Not required. **Reporting options** Crystal Reports reporting application is optional if running IBM Enterprise Records reports through Crystal Reports. Cognos reporting application is optional if running IBM Enterprise Records reports through Cognos. **Component has its own client files?** No. **Component needs client files of other components after installation?** Yes. Update IBM Enterprise Records with Content Platform Engine client files.
IBM Case Manager Includes Case Manager Builder and Case Manager Client	Simplifies the job of designing and building a case management system and provides a graphical user interface for case workers to easily manage cases. **Case management overview** IBM Case Manager, Version 5.1 > Case management overview **Installation documentation** IBM Case Manager, Version 5.1 > Installing, upgrading, and configuring IBM Case Manager	**Content Platform Engine, Workplace XT, Business Space powered by WebSphere®, IBM Content Management Interoperability Services for FileNet Content Manager** Required. **Application server** Required. **Database** Required. Used by Business Space. **Component has its own client files?** No. For environments that integrate with IBM Content Manager, install the IBM Content Manager Java API toolkit on the Content Platform Engine. **Component needs client files of other components after installation?** Yes. Update IBM Case Manager with Content Platform Engine client files.

Table 1. Summary of FileNet P8 component dependencies (continued)

Component	Description	Summary of dependencies and client file requirements
IBM FileNet Content Federation Services for use with repositories other than CMOD and Image Services. This table does not show installation dependencies for CFS-IS and CFS-CMOD as all required components are installed when you install those products.	Provides storage services whereby content stored externally can be accessed by FileNet P8. **IBM FileNet Content Federation Services System Overview** FileNet P8 System Overview > Architecture > Content components > IBM FileNet CFS for Content Integrator **IBM FileNet Content Federation Services installation documentation** Installing additional FileNet P8 products > IBM Content Federation Services installation and upgrade > Installing or upgrading Content Federation Services for IBM Content Integrator > Installing and configuring Content Federation Services **IBM Content Integrator product overview** IBM Content Integrator, Version 8.6 > Overview of Content Integrator **IBM Content Integrator installation documentation** IBM Content Integrator, Version 8.6 > Installation overview	**Content Platform Engine** Required. **IBM Content Integrator** Required. **Application server** Required by IBM FileNet Content Federation Services administration application. **Database** Required. **Component has its own client files?** No. **Component needs client files of other components after installation?** No.
IBM System Dashboard for Enterprise Content Management	Provides an application for viewing system health and performance. **System Overview** FileNet P8 System Overview > Architecture > Administrative components > Dashboard **Installation documentation** Administering IBM FileNet P8 > Monitoring IBM FileNet P8 > IBM System Dashboard for Enterprise Content Management > Installing the IBM System Dashboard for Enterprise Content Management Listener	**Content Platform Engine** Not required. **Application server or database** Not required. **Component has its own client files?** No. **Component needs client files of other components after installation?** No.

Table 1. Summary of FileNet P8 component dependencies (continued)

Component	Description	Summary of dependencies and client file requirements
FileNet Collaboration Services	Enables Lotus Quickr applications to use Content Platform Engine as a repository. **System Overview** FileNet P8 System Overview > Features > Application integration > FileNet Collaboration Services integration **Installation documentation** Installing additional FileNet P8 products > IBM FileNet Collaboration Services installation and administration > Installing IBM FileNet Collaboration Services	**Content Platform Engine** Required. **Application Engine or Workplace XT** Required. **Application server** WebSphere required. **Database** Required. **Component has its own client files?** No. **Component needs client files of other components after installation?** Yes. Update FileNet Collaboration Services with Content Platform Engine client files.
IBM Content Management Interoperability Services for FileNet Content Manager	Implementation of CMIS provider for IBM FileNet Content Manager. CMIS services are defined in the OASIS CMIS specification. **Architecture overview** Installing additional FileNet P8 products > IBM CMIS for FileNet Content Manager installation > IBM CMIS for FileNet Content Manager architecture overview **Installation documentation** Installing additional FileNet P8 products > IBM CMIS for FileNet Content Manager installation > Installing IBM CMIS for FileNet Content Manager	**Content Platform Engine** Required. **Application server** WebSphere required **Database** No. **Component has its own client files?** No. **Component needs client files of other components after installation?** Update IBM Content Management Interoperability Services for FileNet Content Manager with Content Platform Engine client files.
FileNet Connector for Microsoft SharePoint Web Parts	Enables integration with Sharepoint, providing access to Content Platform Engine. **System Overview** FileNet P8 System Overview > Features > Application integration > SharePoint integration **Installation documentation** FileNet Connector for SharePoint Web Parts > Installation Planning and Procedures	**Content Platform Engine** Required. **Application Engine or Workplace XT** Required. **Database** SQL Server is optional. **Application server** Required. **Component has its own client files?** No. **Component needs client files of other components after installation?** No.

Table 1. Summary of FileNet P8 component dependencies (continued)

Component	Description	Summary of dependencies and client file requirements
IBM FileNet Integration for Microsoft Office	Enables integration of Microsoft Office 2007 and later applications with Workplace XT. **System Overview** System Overview > Architecture > Application Components > FileNet Integration for Microsoft Office **Installation documentation** Installing additional FileNet P8 products > IBM FileNet Integration for Microsoft Office installation and upgrade > Installing IBM FileNet Integration for Microsoft Office	**Content Platform Engine, Workplace XT** Required. **Application server or database** Not required. **Component has its own client files?** No. **Component needs client files of other components after installation?** No.
Application Integration for IBM FileNet Workplace	Enables integration of Microsoft Office applications with Workplace or Workplace XT. **System Overview** System overview > Features > Application integration > Microsoft Office integration **Installation documentation** Installing or upgrading FileNet P8 Platform > Installing a distributed FileNet P8 Platform system > Optional installation tasks > Installing Application Integration	**Content Platform Engine** Required. **Application Engine or Workplace XT** Required. **Application server or database** Not required. **Component has its own client files?** No. **Component needs client files of other components after installation?** No.
IBM FileNet Case Analyzer	Delivers data that enables you to report, monitor and analyze processes, optimize operations, and proactively address business trends. **System Overview** FileNet P8 System Overview > Architecture > Process components > Case Analyzer **Installation documentation** Installing additional FileNet P8 products > IBM FileNet Case Analyzer installation and upgrade > Installing and configuring FileNet Case Analyzer > Installing FileNet Case Analyzer Engine	**Content Platform Engine** Required. **Cognos Business Intelligence** Optional (for Cognos reports only). **Application server** Not required. **Database** Required. **Component has its own client files?** Yes. **Component needs client files of other components after installation?** No.

Table 1. Summary of FileNet P8 component dependencies (continued)

Component	Description	Summary of dependencies and client file requirements
IBM FileNet Process Simulator	Simulates workflows by performing what-if scenarios. **System Overview** FileNet P8 System Overview > Architecture > Process components > Process Simulator **Installation documentation** Installing additional FileNet P8 products > IBM FileNet Process Simulator installation and upgrade > Install and configure Process Simulator > Install Process Simulator	**Content Platform Engine, IBM FileNet Case Analyzer** Required. **Application Engine or Workplace XT** Required. **Application server or database** Not required. **Component has its own client files?** No. **Component needs client files of other components after installation?** Yes. Update IBM FileNet Process Simulator with Content Platform Engine client files.
IBM FileNet eForms for P8	Helps you design, manage and process electronic forms for enterprise content management. **System Overview** FileNet P8 System Overview > Features > eForms management **Installation documentation** Installing additional FileNet P8 products > IBM FileNet eForms for P8 installation and upgrade > Installing IBM FileNet eForms for P8 > Installing and configuring IBM FileNet eForms for P8 > Installing IBM FileNet eForms for P8 software	**Content Platform Engine** Required. **Application Engine or Workplace XT** Required. **Application server** Required. **Database** Not required. **Component has its own client files?** No. **Component needs client files of other components after installation?** No.
IBM FileNet Case Monitor	IBM FileNet Case Monitor includes a set of objects that IBM Cognos Real-time Monitoring can use to monitor case and workflow activities of your business. **Information** Integrating workflow into document management > IBM FileNet Case Monitor	**Content Platform Engine, Case Analyzer** Required. **IBM Cognos Real-time Monitoring** Required. **Application server** Required. **Database** Required. **Component has its own client files?** No. **Component needs client files of other components after installation?** No.

Table 1. Summary of FileNet P8 component dependencies (continued)

Component	Description	Summary of dependencies and client file requirements
IBM Content Analytics with Enterprise Search	Provides the ability to apply text analytics to content in FileNet P8 and IBM Case Manager repositories and query the analyzed information. Crawlers gather the following types of content which is then parsed, analyzed, and indexed for search: • Document classes and folders from IBM FileNet P8 servers • Documents and metadata from IBM Case Manager case solutions **Information** **System Requirements** Supported data sources in IBM Content Analytics with Enterprise Search Version 3.0	**Content Platform Engine** Required on the IBM Content Analytics with Enterprise Search crawler server. The escrfilenet script, provided by IBM Content Analytics with Enterprise Search, must be run on the crawler server.
IBM Content Classification	Provides automatic classification services for content in FileNet P8 repositories. Content Classification analyzes content, determines where items belong in the repository, and can automatically set document properties and move items to the correct folders or document classes. If you also use IBM Enterprise Records, items can be automatically declared as records when they are classified in accordance with your record retention and compliance standards. **System Overview** **Installation documentation**	**Content Platform Engine** Required. **Application server** Not required. **Database** Not required. **Component has its own client files?** Yes. **Component needs client files of other components after installation?** Yes. Update Content Classification with Content Platform Engine client files.
IBM Content Navigator	A web client that provides users with a console for working with content from multiple content servers. **System Overview** **Installation documentation**	**Content Platform Engine** Required. **Note:** IBM Content Navigator supports multiple repositories. The requirements presented here are only for Content Platform Engine. **Application server** Required. **Database** Required. **Component has its own client files?** No. **Component needs client files of other components after installation?** Yes. The IBM Content Navigator installation program installs the required FileNet P8 client files.

Installation scenarios

Depending on how you plan to use your FileNet P8 system, you might make different choices in how you install the components. You can review the possible FileNet P8 environment scenarios to help you plan your installation process.

"Overview of installation types"
Before putting your FileNet P8 system into production, it is often a good idea to install it several times, with each installation fulfilling a different purpose.

"Single server scenario" on page 16
You can install FileNet P8 by using the Composite Platform Installation Tool. This tool installs all the middleware products and all the FileNet P8 components on a single server in one installation session.

"Standard distributed scenario" on page 17
In a typical distributed installation scenario, you install the FileNet P8 platform components on a system of networked servers. You can install some components as stand-alone applications, or install multiple instances of a single component.

Overview of installation types

Before putting your FileNet P8 system into production, it is often a good idea to install it several times, with each installation fulfilling a different purpose.

During your planning phase, you decide which of the installation scenarios, such as the single server, the standard distributed, or the high availability scenario, would be best to use for the following types of installations:

- Proof of concept
- Development
- Test
- Preproduction
- Disaster recovery
- Production

Proof of concept system

A proof of concept system can be used to demonstrate basic functionality, such as document management and simple workflow, to a prospective customer, a development partner, or a set of users.

This system might be a single-server configuration of just the core FileNet P8 components you want to demonstrate. Or it could be the core components plus one or more expansion products that are important to your intended development activities or your audience.

The Composite Platform Installation Tool (CPIT) provides a quick way to create a proof of concept system on one server. It automatically configures the underlying required software and applies a baseline set of default FileNet P8 configuration settings. However, make sure that you are aware of the following factors:

- It does not install IBM Content Search Services or configure other add-ons or expansion products.
- It uses WebSphere Application Server, DB2® for Linux, UNIX and Windows, and Tivoli® Directory Server only. This is the only configuration installed and configured by the Composite Platform Installation Tool.
- It installs onto one server only.

- The Installation and Upgrade Worksheet is not needed when you use the Composite Platform Installation Tool.

Before you install a proof of concept system, make the following decisions:

- Decide whether using the Composite Platform Installation Tool is sufficient to achieve your proof of concept, or whether you need a more complex system, with multiple servers and essential add-ons, or with different components. In this case, you would probably follow the standard distributed scenario.
- Decide whether to keep your proof of concept system in place without major modifications, at least during the early stages, in order to have a working example of the original installation as a reference.
- Decide whether you intend to use the proof of concept system as a development or test system.

Follow either the single server scenario or the standard distributed installation scenario, including high availability elements if appropriate, to install your proof of concept system.

Development system

A development system is used by software developers to design and implement code for custom applications.

A development system should be only large enough to accommodate your development team and to contain the components required by the system under design. In some cases, more than one development system might be required, for example, if developers are working on different subprojects that could conflict or require unique capacity. The development system might not need to be as carefully controlled as a test system. For example, you could install products or debugging tools on a development system, or make environmental changes that are not recommended for production or intended for final documentation. This flexibility might not be advisable for a test system that is meant to exercise the production configuration.

It is usually acceptable to use the same authentication realm for the proof of concept system as for the development and test systems, unless you have specific reasons not to. The benefit of using the same authentication realm is that these systems can use the same directory server (LDAP) accounts and authentication realms, which makes the subsequent development and test systems easier to configure.

Before you install a development system, make the following decisions:

- Decide whether to use an existing proof of concept system as the basis for the development system.
- Decide whether to install one of the bundled FileNet P8 client applications even if your customized solution will not use these products. For example, you might want to compare your customized application with the FileNet P8 clients.
- Decide which APIs are needed to code your custom application, and then include the components that are required to implement those APIs.
- Decide whether you want to collocate FileNet P8 components on the same server. Collocation is not a best practice in a production environment but can be a good option for development systems, especially if server resources are scarce and underlying system performance is not a major concern.

- Decide what kind of content storage areas you want to configure. For your development system, you might want to use a database storage area, which is easier to configure than a file storage area that is based in a file system.

Unless your development system requirements can be met by using the single server scenario, follow the standard distributed installation scenario, including high availability elements if appropriate, to install your test system.

Test system

A test system is used to evaluate the quality of the applications during development and to assess all subsequent changes to the code after the product is released. A test system is also used to evaluate product upgrades and fix packs before applying them to other systems, such as production systems that are already rolled out across your enterprise.

An important usage of a test system is to make sure that you have the correct versions of each software component. The owners of the test system must therefore be careful to control all changes to it. Configure your test system exactly as described in the installation documentation and by the hardware and software requirements. Control, maintain, and track the elements of your test system as carefully as possible so that testing integrity can be assured. Typically, a test system is backed up so that it can be returned to a known state without reinstalling all the software components. In many cases, you can use the same authentication realm for the test and development systems, unless you have security restrictions within your organization.

Before you install a test system, make the following decisions:

- Decide how large your test system must be to provide an adequate testing environment for activities such as code assessment, installation and upgrade testing, functional testing, and performance monitoring.
- If your production system is expected to be a high availability environment, you might decide not to configure high availability on test systems but rather to use the preproduction system for testing under high availability conditions before installing the software into production.
- Decide whether you want to collocate FileNet P8 components on the same server. Collocation is not a best practice in a production environment but can be a good option for test systems, especially if server resources are scarce and you must increase or maintain system performance.

Unless your test system's requirements can be met using the single server scenario, follow the standard distributed installation scenario, including high availability elements if appropriate, to install your test system.

Preproduction system

A preproduction system is used to try out changes before making those changes on a production environment.

It should be as similar to the production system as you can reasonably implement. Do not assume that a version change or some new code that runs acceptably on the test system will run acceptably on a production system; it must be tested first on a system that closely approximates the production configuration. The greater the difference between the preproduction system and the production environment, the greater your risk when implementing new software. For example, if the production

system has a cluster of 20 servers, the preproduction system would need a cluster of at least two servers, and ideally more. Final performance testing is often done on the preproduction systems, so the closer it is to the production system, the more reliable your performance test results will be. As a best practice, all changes that are successfully tested on a test system should first be implemented on the preproduction system before being added to the production system.

If a preproduction system includes IBM Content Search Services, it must have access to at least some of the documents to be searched. This access might be accomplished by providing a complete synchronized replica of the data, or only a subset of the data.

Before you install a preproduction system, make the following decisions:

- Decide whether you need to install fixed content devices in your preproduction system. Because of the difficulties implementing a fixed content device or other very large storage devices, you might decide to implement such devices only on the production system.
- Decide how large a data set you need to approximate the production system stored content and workflow information for preproduction functional testing.

Follow the standard distributed installation scenario, including high availability elements if appropriate, to install your preproduction system.

Disaster recovery system

Because it is designed to provide business continuity after a natural or human-induced disaster, a disaster recovery system is often geographically remote from production. Such a system is not designed to be instantly enabled to replace a production system that is no longer available, because this is generally accomplished by implementing high availability and failover features into the production environment itself.

Production system

A production system is the full-featured, fully tested live system that has access to all content and workflows, on the full suite of platform hardware and software, configured to access your entire set of users and groups, that supports your application.

Follow the standard distributed installation scenario, including high availability elements if appropriate, to install your production system.

Single server scenario

You can install FileNet P8 by using the Composite Platform Installation Tool. This tool installs all the middleware products and all the FileNet P8 components on a single server in one installation session.

The result is a FileNet P8 system most typically used for the following tasks:

- Developing and demonstrating proofs of concept
- Previewing technology
- Demonstrating and understanding content and process management functionality
- Configuring a basic content and process management solution

If you plan to run a single server installation by using the Composite Platform Installation Tool, you do not need to do most of the preparation tasks that you must perform for any of the other installation scenarios. Also, you do not need to

fill out the Installation and Upgrade Worksheet. The Composite Platform Installation Tool provides all the values needed for a fully functional FileNet P8 system.

For details on collocating some FileNet P8 components, see the *IBM FileNet P8 Hardware and Software Requirements*.

Standard distributed scenario

In a typical distributed installation scenario, you install the FileNet P8 platform components on a system of networked servers. You can install some components as stand-alone applications, or install multiple instances of a single component.

In a standard distributed environment, you install FileNet P8 on a number of servers, according to the way you plan to use your system. This configuration model can vary from a simple system with one stand-alone component per server to a complex system with multiple instances, virtual servers, and managed deployments.

Most FileNet P8 platform components work with middleware applications such as web application servers, databases, and directory service applications. This guide provides additional considerations and preparation tasks by role for the administrators of these middleware applications. For details on which types and versions of these applications work together in a FileNet P8 platform environment, see the *IBM FileNet P8 Hardware and Software Requirements*.

You can choose to collocate some FileNet P8 platform components. For details on collocation decisions, see the *IBM FileNet P8 Hardware and Software Requirements*.

If you plan to use related add-on products with your FileNet P8 platform environment, review the installation documentation for the add-ons before you install and configure FileNet P8.

Creating multiple instances of FileNet P8 platform components

You can install or deploy multiple instances of Content Platform Engine on a single web application server.

Using multiple instances of Content Platform Engine means that you can provide a different repository of content for different areas within an organization. For example, you could create an instance for use by a Research and Development group, and create a separate instance for use by a Human Resources group.

"Content Platform Engine distributed installation scenario"
In a typical distributed installation scenario, you install the FileNet P8 platform components on a system of networked servers. You can install some components as stand-alone applications, or install multiple instances of a single component.

"IBM Content Search Services distributed installation scenario" on page 18
In a typical distributed installation scenario you can install IBM Content Search Services. You can also install IBM Content Search Services to run with supported custom applications.

"Application Engine distributed installation scenario" on page 19
You can install Application Engine as a stand-alone application. You can also install multiple instances of Application Engine.

Content Platform Engine distributed installation scenario:

In a typical distributed installation scenario, you install the FileNet P8 platform components on a system of networked servers. You can install some components as stand-alone applications, or install multiple instances of a single component.

Stand-alone deployment

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

Managed deployment

When you deploy Content Platform Engine in a WebSphere Application Server managed environment, you can install and configure Content Platform Engine on any managed node. Then use the application server administration console to deploy the bootstrapped Content Platform Engine EAR file to the servers on each managed node or to a cluster.

Non-managed deployment

When you deploy Content Platform Engine in a WebSphere Application Server or WebLogic Server non-managed environment, you install and configure Content Platform Engine on a single server in the environment. After you deploy the bootstrapped Content Platform Engine EAR file on the initial server, create additional Configuration Manager profiles, copy the bootstrapped EAR file to the other Configuration Manager profiles on the same server and deploy from the same server.

When you deploy Content Platform Engine in a JBoss Application Server environment, install and configure Content Platform Engine on an initial server in the environment, and then copy the Content Platform Engine EAR file from the initial server to the other servers in the environment.

IBM Content Search Services distributed installation scenario:

In a typical distributed installation scenario you can install IBM Content Search Services. You can also install IBM Content Search Services to run with supported custom applications.

Single instance single server deployment
When you deploy a single instance of IBM Content Search Services on a single server, you must configure your IBM Content Search Services server for mixed mode (indexing and searching).

Multiple instance single server deployment
You can deploy multiple instances ofIBM Content Search Services on a single server for load balancing and performance. Each instance can be configured for mixed mode (indexing and searching) or dedicated mode (indexing or searching).

Multiple instance multiple server deployment
You can deploy multiple instances of IBM Content Search Services on multiple servers in a farm configuration for load balancing, performance and high availability. For high availability, you need to ensure that there are multiple instances running with mixed mode (indexing and searching) on multiple servers. For dedicated mode (indexing or searching), you need to ensure that you have a pair of instances for each mode.

Application Engine distributed installation scenario:

You can install Application Engine as a stand-alone application. You can also install multiple instances of Application Engine.

Stand-alone deployment

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

Multi-instance deployment

If you want to deploy multiple Application Engine instances, install and deploy Application Engine on separate servers.

Each Application Engine instance is isolated from the others, and there is no exchange of information between the instances. For example, you can dedicate a Application Engine instance for use by a certain group. This creates a distinct Workplace interface for the group, and you can configure permissions, settings, and functions accordingly. For another group, you might want to configure a separate instance of the Workplace application with different settings. Each instance has its own user and site preferences. All instances provide an interface to the Content Platform Engine object stores.

Managed deployment

When you deploy Application Engine with WebSphere Application Server Network Deployment in a managed mode, you must install and configure Application Engine on all managed cluster nodes (using the administrative console for the deployment manager) that are assigned to Application Engine.

JBoss Application Server has no managed deployment capability.

Non-managed deployment

When you deploy Application Engine in a WebSphere Application Server or WebLogic Server non-managed environment, or a JBoss Application Server environment, you install, configure, and deploy Application Engine on every server in the environment.

Definition of installation roles

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

Installation administrator

- Runs FileNet P8 installation programs during initial setup.
- Runs Configuration Manager during initial setup, followed by starting IBM Administration Console for Content Platform Engine.
- Runs FileNet P8 upgrade programs during upgrades.

- Abbreviated as IA. Responsible for coordinating the information described in this worksheet. The information itself will require the input from the other roles.

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

Information technology administrator

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

Security administrator

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

Database administrator

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

Application server administrator

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

FileNet P8 administrator

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

Related concepts:

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

"IT administrator installation tasks" on page 24
The Information Technology administrator must prepare the network and operating systems, and carry out certain security configurations to prepare your environment for FileNet P8.

"Security administrator installation tasks" on page 42
The Security administrator must prepare the security environment for the FileNet P8 platform, including planning the security environment, configuring the directory server, and creating accounts.

"Application Server administrator installation tasks" on page 61
The Application Server Administrator must prepare the application servers for FileNet P8, including planning deployment, creating administrative accounts, and configuring JDBC drivers for both Content Platform Engine and Application Engine.

Related tasks:

"Database administrator installation tasks" on page 53
The Database administrator must prepare the databases required for FileNet P8, including gathering information about data sources, creating databases and database accounts.

Using the installation and upgrade worksheet

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

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

Some of the features of the Installation and Upgrade Worksheet are:

- **Instructions**: describes the worksheet and includes a button that runs the Customize Worksheet macro.
- The two highlighted columns, **Property or Parameter** and **ENTER YOUR VALUE HERE**, provide the simplest view of the requirement. The others add identifying information and help you sort and filter the rows usefully.
- The **Role** column assigns each row to an administrator and uses the following acronyms:
  - IA: Installation Administrator
  - ITA: Information Technology Administrator
  - ASA: Application Server Administrator
  - DBA: Database Administrator
  - SA: Security Administrator
  - P8A: FileNet P8 Administrator

- Property definitions are contained in the column titled **Description**.
- Some rows, though not all, contain a hyperlink in the **IC help link** column. Click this hyperlink to run a query against the IBM Information Center, which opens with the Search Results pane showing the topics that contain the words in the query phrase. Browse the search results until you have enough information to be able to enter a value in the Worksheet row.

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

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

Running the Customize Worksheet macro

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

Important: For support of the full range of built-in filter and macro features, use Microsoft Excel to view the Installation and Upgrade Worksheet file. You can use other spreadsheet programs to view the file; however, filter and macro support can vary. For example, in Calc from OpenOffice.Org, the column filters work as expected, but the Customize Worksheet button does not.

To run the Customize Worksheet macro:

1. Open the Installation and Upgrade Worksheet (`p8_worksheet.xls`) and click the **Instructions** worksheet (also called a tab).
2. Scroll down until you see the button representing the Customize Worksheet macro. Click the button.
3. Select the components and options that describe the environment you are preparing for FileNet P8.
   - Installation or Upgrade
   - FileNet P8 Components
   - Application Server type
   - Operating system
   - Database type
   - Directory Server type
   - Number of object stores (adds new sets of rows for creating additional data sources)
   - Name of customized sheet
4. Click **OK**. The macro copies the rows that fulfill your selection criteria into a new worksheet with the name you entered. Enter the values for your environment into this new worksheet.
5. Click the name of the new worksheet at the bottom of the Excel window. Add your preparation values into this new worksheet.
6. Notice that the new worksheet has buttons at the top titled **Show Installer View** and **Show Full View**, depending on its state. The **Show Installer View** displays only those columns that you need while running installation or configuration programs.

Autofiltering and sorting the Worksheet

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

AutoFiltering is a quick way to display only those rows that meet a certain criteria.

To use AutoFilter:

1. Make sure AutoFiltering is enabled. (Select the entire row with the column headers, then click **Data** > **Filter** > **Autofilter**.) AutoFilter arrows will appear to the right of the column labels.
2. Click the **AutoFilter** arrow in the **Installation or Configuration Program** column header and select the program you are interested in (for example, CPE installer).
3. For a custom AutoFilter, click the **AutoFilter** arrow in any column header, select **Custom**, and use the dialog box to define a filter that will show rows that meet your criteria.
4. To turn off AutoFiltering in a column, click the column **AutoFilter** arrow and select **(All)**.
5. To reorder rows alphabetically, do a Sort:
   a. Click anywhere in a column, for example, Column A Role.

      The only possible values in the Role column are ASA, SA, DBA, ITA, and P8A. Sorting on Role therefore groups the rows by this attribute, in alphabetic order. Several other columns also have a limited number of possible values which means they can be usefully sorted.
   b. Click the **Sort Ascending** icon in the Excel toolbar, or use the **Data** > **Sort** menu command. The rows sort on Role.

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

Performing the required installation preparation tasks

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

Some tasks require input that results from other preparation tasks performed by other administrator roles. While performing the tasks, record results in the *Installation and Upgrade Worksheet*. See the "Using the installation and upgrade worksheet" on page 21 topic for details.

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

"IT administrator installation tasks" on page 24
The Information Technology administrator must prepare the network and operating systems, and carry out certain security configurations to prepare your environment for FileNet P8.

"Security administrator installation tasks" on page 42
The Security administrator must prepare the security environment for the FileNet P8 platform, including planning the security environment, configuring the directory server, and creating accounts.

"Database administrator installation tasks" on page 53
The Database administrator must prepare the databases required for FileNet P8, including gathering information about data sources, creating databases and database accounts.

"Application Server administrator installation tasks" on page 61
The Application Server Administrator must prepare the application servers for

FileNet P8, including planning deployment, creating administrative accounts, and configuring JDBC drivers for both Content Platform Engine and Application Engine.

IT administrator installation tasks

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

- Review all rows assigned to the IT administrator (ITA) in the "Using the installation and upgrade worksheet" on page 21. While you complete the following preparation tasks, provide values for the rows that are appropriate to your installation.

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

  – Click the **AutoFilter** drop-down arrow in the **Role** column header and select ITA.

  – Further filter the result set by clicking the **AutoFilter** drop-down arrow in any of the other columns and selecting a value or clear a filter by selecting **All**.

- If you are installing in a non-English environment, review Preparing non-English environments for installing FileNet P8 before you begin your preparation tasks.

  "Creating Content Platform Engine operating system accounts" on page 25
  Create the following Content Platform Engine operating system accounts.

  "Creating Application Engine or Workplace XT accounts" on page 28
  Several operating system accounts are needed to install and deploy Application Engine or Workplace XT.

  "Preparing for IBM Content Search Services" on page 31
  If you are installing IBM Content Search Services, you must do some things to get ready.

  "Configuring AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris" on page 33
  The FileNet P8 system components require some specific configuration settings on the machines where you install them.

  "Configuring Microsoft Windows" on page 36
  You must perform certain operating system procedures on all Windows-based servers where you will install FileNet P8, including planning for adequate disk and temp space and port requirements, and installing required levels of Microsoft .NET Framework, Web Services Enhancements (WSE), or Windows Communication Foundation (WCF).

  "Configuring the network" on page 36
  You must perform certain configurations on the network before installing FileNet P8 platform.

  "Preparing file servers for file storage areas" on page 37
  To prepare for file storage, you must configure file servers for file storage areas and configure a remote access protocol. and prepare the file servers where file storage areas are to be located.

Creating Content Platform Engine operating system accounts

Create the following Content Platform Engine operating system accounts.

Accounts are referred to in documentation in the following ways:

- By a display name; for example, Database User Name. An account's display name is how the FileNet P8 user interface, such as a setup program or dialog box, refers to the account. Many accounts have both a display name and a variable.
- By a variable designator; for example *cpe_db_user*, using lower-cased italics and underscores. The variable is intended to show that you must designate your own account to act in the role described by the variable. The variable is the unique identifier for a particular account.

If you see a reference to an account that you do not understand, search the Information Center for that reference.

"Creating the Content Platform Engine application server installation administrator"
An operating system account you used to install the Content Platform Engine's application server.

"Creating the Content Platform Engine application server installation group" on page 26
An operating system group account to which several Content Platform Engine accounts must belong.

"Creating Content Platform Engine installer account" on page 26
An operating system account you use to install Content Platform Engine.

"Creating Content Platform Engine operating system user account" on page 27
The account you use to create and configure the shared root directory of a file storage area or content cache area.

"Creating Configuration Manager user" on page 28
An operating system account you use to run Configuration Manager.

Creating the Content Platform Engine application server installation administrator:

An operating system account you used to install the Content Platform Engine's application server.

1. Create the following operating system account:

   Content Platform Engine application server installation administrator

   Unique identifier
   cpe_appserver_install_user

   Description
   The *cpe_appserver_install_user* account is needed during the installation process to perform the following tasks:
   - Create and configure the application server/domain/profile for Content Platform Engine.
   - Start or stop the application server instance when needed.

     If you are prompted for credentials (which might happen if WebSphere Global security is enabled or if WebLogic is in Production Mode), pass in the credentials of the *appserver_admin* or *appserver_console_user*. See those entries for more information.

- Modify the application server files or directories as needed for deploying Content Platform Engine using the Configuration Manager tool.
- Provide create, read and write permissions for directories on devices or drives that are used for external Content Platform Engine file storage.

cpe_appserver_install_user must belong to the *cpe_appserver_install_group*.

2. Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *cpe_appserver_install_user*.

Creating the Content Platform Engine application server installation group:

An operating system group account to which several Content Platform Engine accounts must belong.

1. Create the following operating system account:

   Content Platform Engine application server installation group

   Unique identifier
   cpe_appserver_install_group

   Description
   An operating system group account. You will be instructed to grant certain permissions to this group during Content Platform Engine installation and configuration.

   The user accounts in *cpe_appserver_install_group* will perform the following tasks:

   - Give operating system privileges to the directories used for Content Platform Engine installation and for the application server's instance/domain/profile.
   - Configure and deploy the Content Platform Engine EAR files which require access to the application server's instance/domain/profile directories.
   - Have permissions on devices/drives to read and write that are designated for external Content Platform Engine file storage.

   Minimum required permissions
   Use your local machine's administrative tools to add the following accounts to this group:

   - *cpe_appserver_install_user*
   - *cpe_install_user*
   - *config_mgr_user*

2. Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *cpe_appserver_install_group*.

Creating Content Platform Engine installer account:

An operating system account you use to install Content Platform Engine.

1. If installing Content Platform Engine on AIX®, Solaris, HPUX, HPUXi, Linux, Linux on System z®, create the following operating system account

   Content Platform Engine installer account (AIX, Solaris, HPUX, HPUXi, Linux, Linux on System z)

   Unique identifier
   cpe_install_user

   Description
   An operating system account used to run the Content Platform Engine installation program.

   Minimum required permissions
   Use your administrative tools to grant *cpe_install_user* at least the following permissions:

   - Read, write, and execute permissions to the device or location where:
     - Content Platform Engine is to be installed.
     - The application server `instance/domain/profile` has been installed.
   - Write permission to the directories where you create file storage areas, index areas, and content caches.
   - Write permission on the */tmp* directory.
   - Membership in the *cpe_appserver_install_group*.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *cpe_install_user*.

Creating Content Platform Engine operating system user account:

The account you use to create and configure the shared root directory of a file storage area or content cache area.

1. Create the following operating system account:

   Content Platform Engine operating system user

   Unique identifier
   cpe_os_user

   Description
   An operating system account you must log on as to create and configure the shared root directory of a file storage area or content cache area.

   The operating system user who logs on to the Content Platform Engine server and starts the local application server process is the account that must be used to secure the folders and files in a file storage area. From a practical standpoint, the account that is used to install the application server should be the same account that is used to start the application server process. As an administrator, you will always log in using the same *cpe_os_user* account to secure the folders and files in the file system that Content Platform Engine will use for a file storage area.

   Minimum required permissions

AIX, HPUX, HPUXi, Linux, Linux for System z, Solaris
For AIX, HPUX, HPUXi, Linux, Linux for System z, or Solaris-based Content Platform Engine and file storage areas, configuring security requires the use of NFS.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *cpe_os_user*.

Creating Configuration Manager user:

An operating system account you use to run Configuration Manager.

1. Create the following operating system account:

   Configuration Manager user

   Unique identifier
   config_mgr_user

   Description
   An operating system account you will use to run Configuration Manager.

   Minimum required permissions
   config_mgr_user must belong to the *cpe_appserver_install_group*.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *config_mgr_user*.

Creating Application Engine or Workplace XT accounts

Several operating system accounts are needed to install and deploy Application Engine or Workplace XT.

Accounts are referred to in documentation in the following ways:

- By a display name; for example, Database User Name. An account's display name is how the FileNet P8 user interface, such as a setup program or dialog box, refers to the account. Many accounts have both a display name and a variable.
- By a variable designator; for example *cpe_db_user*, using lower-cased italics and underscores. The variable is intended to show that you must designate your own account to act in the role described by the variable. The variable is the unique identifier for a particular account.

If you see a reference to an account that you do not understand, search the Information Center for that reference.

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

"Creating the Application Engine or Workplace XT installer account"
An operating system account that you use to run the installation program for Application Engine or Workplace XT.

"Creating the Application Engine or Workplace XT deployment account" on page 30

Creating the Application Engine or Workplace XT installer account:

An operating system account that you use to run the installation program for Application Engine or Workplace XT.

1. Create the following operating system account:

Application Engine or Workplace XT installer account (Windows)

Unique identifier
ae_install_user or *wpxt_install_user*

Description
The operating system account you will use to log on to a Windows machine and launch the Application Engine or Workplace XT installation program.

Minimum required permissions
This account must be a Windows Local administrator or a user with equivalent permissions.

If the P8TASKMAN_HOME environment variable exists, you must grant read and write permission to the `../Common Files/taskmaninstances.xml` file. The default location for Common Files for Windows: `C:\Program Files\IBM\FileNet\Common Files`.

The installer account (*ae_install_user* or *wpxt_install_user*) must be granted read/write/execute permission to these directories and files:

Installation paths (*ae_install_path* or *wpxt_install_path*)
Grant *ae_install_user* read and write permission to the *ae_install_path*.

Grant *wpxt_install_user* read and write permission to the *wpxt_install_path*.

WebSphere Application Server
WAS_HOME`/profiles/default/installedApps/`*node_name*`/app_engine_war.ear/app_engine.war`

WAS_HOME`/profiles/default/config/cells/`*machine_name*`/Node01cell/nodes/`*machine_name*`/Node01/serverindex.xml`

Installation paths (*BPMClient_directory*)
Grant *ae_install_user* read and write permission to the *BPMClient_directory*.

Grant *wpxt_install_user* read and write permission to the *BPMClient_directory*.

Default BPMClient directory (Windows):
`c:\Program Files\IBM\FileNet\BPMClient`

Application Engine or Workplace XT installer account (AIX, HPUX, Linux, Solaris)

Unique identifier
ae_install_user or *wpxt_install_user*

Description
The operating account you will use to log on to a AIX, HPUX, Linux, or Solaris machine and launch the Application Engine or Workplace XT installation program.

Minimum required permissions

If the P8TASKMAN_HOME environment variable exists, you must grant read and write permission to the `../Common Files/taskmaninstances.xml` file. The default location for Common Files: `/opt/IBM/FileNet/CommonFiles`.

The installer account (*ae_install_user* or *wpxt_install_user*) must be granted read/write/execute permission to these directories and files:

Installation paths (*ae_install_path* or *wpxt_install_path*)

Grant *ae_install_user* read and write permission to the *ae_install_path*.

Grant *wpxt_install_user* read and write permission to the *wpxt_install_path*.

WebSphere Application Server

WAS_HOME`/profiles/default/installedApps/`*node_name*`/app_engine_war.ear/app_engine.war`

WAS_HOME`/profiles/default/config/cells/`*machine_name*`/Node01cell/nodes/`*machine_name*`/Node01/serverindex.xml`

Installation paths (*BPMClient_directory*)

Grant *ae_install_user* read and write permission to the *BPMClient_directory*.

Grant *wpxt_install_user* read and write permission to the *BPMClient_directory*.

Default BPMClient directory (AIX, HPUX, Linux, Solaris):

`/opt/IBM/FileNet/BPMClient`

2. Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *ae_install_user* or *wpxt_install_user*.

Creating the Application Engine or Workplace XT deployment account:

1. Create the following operating system account:

Application Engine or Workplace XT deployment account

Unique identifier

ae_deploy_user or *wpxt_deploy_user*

Description

This account will have permissions to deploy an application. It can be the same as the Application Engine or Workplace XT installer account.

Minimum required permissions

The deployment account (*ae_deploy_user* or *wpxt_deploy_user*) must be granted read/write/execute permission to these directories and files:

WebSphere Application Server

WAS_HOME`/profiles/default/installedApps/`*node_name*`/app_engine_war.ear/app_engine.war`

WAS_HOME/profiles/default/config/cells/*machine_name*/Node01cell/nodes/*machine_name*/Node01/serverindex.xml

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *ae_deploy_user* or *wpxt_deploy_user*.

Preparing for IBM Content Search Services

If you are installing IBM Content Search Services, you must do some things to get ready.

Important: It is a best practice for Content Platform Engine storage areas and IBM Content Search Services full-text indexes to not share the same root directory, disk, or volume. Otherwise, disk I/O contention will cause degraded performance.

"Creating IBM Content Search Services accounts"
If you are installing IBM Content Search Services, you must create new IBM Content Search Services accounts.

"Choosing a load balancing method for IBM Content Search Services servers" on page 32
To optimize indexing and search performance, you need to decide on a method to balance the load among the IBM Content Search Services servers.

"Choosing a standby index area activation policy for IBM Content Search Services" on page 33
To maintain a uniform distribution of input/output among the disks used for searching and indexing, you need to keep a steady number of open index areas.

Creating IBM Content Search Services accounts:

If you are installing IBM Content Search Services, you must create new IBM Content Search Services accounts.

Accounts are referred to in documentation in the following ways:

- By a display name; for example, Database User Name. An account's display name is how the FileNet P8 user interface, such as a setup program or dialog box, refers to the account. Many accounts have both a display name and a variable.
- By a variable designator; for example *cpe_db_user*, using lower-cased italics and underscores. The variable is intended to show that you must designate your own account to act in the role described by the variable. The variable is the unique identifier for a particular account.

If you see a reference to an account that you do not understand, search the Information Center for that reference.

"Creating the IBM Content Search Services operating system account"
The operating system account that you use to start and stop the IBM Content Search Services software.

"Creating the IBM Content Search Services installer account" on page 32
An operating system account you use to install IBM Content Search Services.

Creating the IBM Content Search Services operating system account:

The operating system account that you use to start and stop the IBM Content Search Services software.

1. Use your operating system tools to create the following operating system account on the IBM Content Search Services server:

   IBM Content Search Services operating system account

   Unique identifier
   css_os_user

   Description
   Use this account to run the IBM Content Search Services startup and shutdown commands.

   Minimum required permissions
   This account must be an operating system user with rights to run the IBM Content Search Services startup and shutdown commands. By default, the *css_install_user* can also run these commands.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *css_os_user*.

Creating the IBM Content Search Services installer account:

An operating system account you use to install IBM Content Search Services.

1. Use your operating system tools to create the following operating system account:

   IBM Content Search Services installer account

   Unique identifier
   css_install_user

   Description
   Run the IBM Content Search Services installation program using this account.

   Minimum required permissions
   On Windows, this account must be a Windows Local administrator or a user with equivalent permissions.

   Read/write/execute permission to the *css_install_path*.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *css_install_user*.

Choosing a load balancing method for IBM Content Search Services servers:

To optimize indexing and search performance, you need to decide on a method to balance the load among the IBM Content Search Services servers.

By default Content Platform Engine uses a built-in load-balancing algorithm to assign IBM Content Search Services servers to indexes according to the indexing workload of the servers. The assignments are based on the number of index servers and the resources that are available to each server. If you want to override this built-in algorithm, you can use Administration Console for Content Platform Engine to create affinity groups and manually dedicate IBM Content Search Services servers to specific index areas.

An affinity group is a group of one or more servers that are dedicated to one or more index areas. A server that is a member of an affinity group can serve only index areas that are assigned to that affinity group and that belong to the same site

as the server. A server that is not a member of an affinity group can serve only index areas that do not belong to an affinity group and belong to the same site as the server.

With an affinity group, the administrator can limit the load balancing for an index area to the servers that are members of the group. These servers do the indexing and searching of full-text indexes. All servers in the group must have equal access to the root directory of the index area. The affinity group should include servers that can do indexing and searching.

The affinity group improves performance because you can index your data on a disk that is local to IBM Content Search Services. The downside is that Content Platform Engine cannot provide failover. If the local disk that hosts the index area fails, all indexing and search requests to that index area fail.

Choosing a standby index area activation policy for IBM Content Search Services:

To maintain a uniform distribution of input/output among the disks used for searching and indexing, you need to keep a steady number of open index areas.

To maintain a constant number of index areas in open state, Content Platform Engine needs to open a standby index area as soon as any other index area becomes full. If no standby index areas are available, then Content Platform Engine logs a warning.

To implement this policy, the Content Platform Engine administrator needs to create some standby index areas in advance and assign a priority to each one. Content Platform Engine uses the priority to determine which standby index area to open when another index area becomes full.

The administrator also uses the priority to decide on the storage that is allocated to the index area and to create a backup policy. By default, the priority of each index area is zero, the highest priority.

Configuring AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris

The FileNet P8 system components require some specific configuration settings on the machines where you install them.

"Configuring AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris for FileNet P8 servers (all components)" on page 34
When configuring AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris, ensure the hosts file contents, ensure the minimum required disk and temp space, and determine your port requirements.

"Configuring Content Platform Engine servers (AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris)" on page 34
For Content Platform Engine running on an application server that runs on AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris, you must use the utility program umask to set the default file-creation permissions mask for the JVM instance that will host Content Platform Engine server so that the owner (the user running JVM) and the members of the owner's group have read, write, and execute access permissions, and all others have no access.

"Configuring IBM Content Search Services servers (AIX, Linux, Linux on System z, Solaris)" on page 35
Before you start the IBM Content Search Services installation on AIX, Linux,

Solaris, or Linux on System z, you must ensure that the **fsize** and **nofiles** parameters are set to their unlimited value.

"Configuring Application Engine or Workplace XT servers (Linux)" on page 35
To configure Linux-based servers for Application Engine or Workplace XT, you must ensure that Linux libraries are installed.

Configuring AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris for FileNet P8 servers (all components):

When configuring AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris, ensure the hosts file contents, ensure the minimum required disk and temp space, and determine your port requirements.

To configure AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris for FileNet P8 servers:

1. Ensure hosts file contents.
2. Ensure minimum required disk space and temp space for installation. See *IBM FileNet P8 Hardware and Software Requirements*.
3. Determine port requirements. Consult with the application server, database, and FileNet P8 administrators to determine port requirements for all the servers in your installation environment.
4. If you intend to install FileNet P8 components interactively, ensure that each FileNet P8 server running on AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris uses the X Window system. If you are going to install components from a remote machine, verify that the remote machine has an X Window terminal emulator. If you will use a Windows client to connect to the AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris server to install, either unset DISPLAY or start X Window on the server before you begin the silent installation or uninstallation procedure.
5. For Red Hat Linux 5.x or higher, change the security setting before installation.

   Red Hat Enterprise Linux versions 5.x or higher have a security feature that can cause errors during installation. For details on resolving the issue before you install, see the *IBM FileNet P8 Hardware and Software Requirements*. In the guide, search for the term *SELinux*.

Configuring Content Platform Engine servers (AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris):

For Content Platform Engine running on an application server that runs on AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris, you must use the utility program umask to set the default file-creation permissions mask for the JVM instance that will host Content Platform Engine server so that the owner (the user running JVM) and the members of the owner's group have read, write, and execute access permissions, and all others have no access.

```
umask u=rwx,g=rwx,o=
```

This mask setting ensures that the access permissions on files and directories created by Content Platform Engine server are identical to those you must specify when creating file storage areas on AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris file servers.

This umask setting is also required for the user running Content Platform Engine setup (*cpe_install_user*). The umask must be in the .profile file for the user running JVM and also for *cpe_install_user*.

Configuring IBM Content Search Services servers (AIX, Linux, Linux on System z, Solaris):

Before you start the IBM Content Search Services installation on AIX, Linux, Solaris, or Linux on System z, you must ensure that the **fsize** and **nofiles** parameters are set to their unlimited value.

The IBM Content Search Services installation startup script checks the value of the **fsize** and **nofiles** parameters. The **fsize** parameter controls the maximum file size; the **nofiles** parameter controls the maximum number of open files per process. If the values are not set to unlimited, the startup script attempts to change them to unlimited. If the startup script cannot change the value to unlimited, a warning is generated.

To ensure that the values of **fsize** and **nofiles** are set to their unlimited value:

1. Run the following command to check the value of the **fsize** parameter:
   ```
   ulimit -f
   ```
   If the parameter value is already unlimited (-1), continue at step 3.
2. Open for editing one of the following files, which contain the **fsize** parameter. Set the parameter value to -1, and save your edit.

Table 2. Name of the file to be edited

Operating System	File name
AIX	/etc/security/limits
Solaris, Linux, and Linux on System z	/etc/security/limits.conf

3. Run the following command to check the value of the **nofiles** parameter:
   ```
   ulimit -n
   ```
   The value of **nofiles** is unlimited if it is one of the following values, depending on your operating system:

Table 3. Unlimited value

Operating system	Unlimited value
AIX and Solaris	-1
Linux and Linux on System z	65536

   If the value is already unlimited, continue at step 5.
4. Open for editing (if it is not already open) one of the following files, which contain the **nofiles** parameter. Set the parameter to its unlimited value, and save your edit.

Table 4. Name of the file to be edited

Operating system	File name
AIX	/etc/security/limits
Solaris, Linux, and Linux on System z	/etc/security/limits.conf

5. Log out of the current session. If you changed the value of **fsize** or **nofiles**, log back in for the changes to take effect.

Configuring Application Engine or Workplace XT servers (Linux):

To configure Linux-based servers for Application Engine or Workplace XT, you must ensure that Linux libraries are installed.

To install Application Engine or Workplace XT on Linux, several legacy libraries are required. You must install the `compat-libstdc++` packages on your Red Hat system before beginning your install of Application Engine or Workplace XT.

Configuring Microsoft Windows

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

"Configuring Windows for .NET and COM compatibility clients"
Microsoft .NET Framework is a prerequisite for installing .NET API Clients and COM Compatibility clients. Some clients might also require the installation of Microsoft Web Services Enhancements (WSE).

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

Configuring Windows for .NET and COM compatibility clients:

Microsoft .NET Framework is a prerequisite for installing .NET API Clients and COM Compatibility clients. Some clients might also require the installation of Microsoft Web Services Enhancements (WSE).

To configure Windows for .NET and COM compatibility clients:

1. If you have client programs that use Windows Communication Foundation (WCF) to access Content Platform Engine, ensure that .NET 3.x is installed. WCF is embedded with .NET 3.x or later and requires an SSL secured network connection to Content Platform Engine.
2. Backward compatibility is provided for client programs that use Web Services Enhancements (WSE) to access Content Platform Engine. These clients require the installation of .NET 2.x and WSE 3.0.

Configuring Windows for Content Platform Engine on Active Directory:

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

Configuring the network

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

"Prerequisites to configuring your network" on page 37
A small number of tasks are required to ensure proper network communications before you install FileNet P8 platform. Perform the prerequisite tasks in any order.

"Synchronizing machine clocks" on page 37
FileNet P8 processes require that you synchronize the machine clocks of all FileNet P8 server and client machines.

"Creating a local or shared directory for the shared configuration files (Application Engine or Workplace XT)"
You can create a local or shared directory for the shared configuration files in highly available environments.

Prerequisites to configuring your network:

A small number of tasks are required to ensure proper network communications before you install FileNet P8 platform. Perform the prerequisite tasks in any order.

- Assign all FileNet P8 servers a static IP address.
- Ensure TCP/IP settings. Verify TCP/IP configuration settings on all servers and IBM Administration Console for Content Platform Engine clients intended for FileNet P8 so that they can all communicate with one another.
- Ensure availability of required port numbers. Several port numbers are required by the various FileNet P8 components.

Synchronizing machine clocks:

FileNet P8 processes require that you synchronize the machine clocks of all FileNet P8 server and client machines.

You must make sure that the machine clocks on all FileNet P8 servers, including Content Platform Engine, Application Engine, as well as all database servers and those of FileNet P8 client applications including Workplace XT, Rendition Engine, IBM Case Manager, and so on, are synchronized. Errors that might arise if they are not synchronized include those of authentication, cooperative locking, communication between servers, and others.

Creating a local or shared directory for the shared configuration files (Application Engine or Workplace XT):

You can create a local or shared directory for the shared configuration files in highly available environments.

Remember: At a minimum, the user running the install and the Application Engine/Workplace XT processes needs write access to this directory.

Do not use one of the cluster servers for the file location as this creates a single point of failure. The `bootstrap.properties` file could, theoretically, be placed on a local Windows share or local NFS export directory from any of the systems in the Application Engine/Workplace XT cluster (that is, shared out from the default file location from the first installation). However, if the local system holding the file would go down, other Application Engine/Workplace XT instances will be unable to find the `bootstrap.properties` file and will return error messages.

Preparing file servers for file storage areas

To prepare for file storage, you must configure file servers for file storage areas and configure a remote access protocol. and prepare the file servers where file storage areas are to be located.

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

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

The names of file storage areas and database storage areas must be unique within an object store. A file storage area is usually not on the machine where Content Platform Engine is installed.

For information about file storage areas, see the FileNet P8 help topic **Administering FileNet P8** > **Administering Content Platform Engine** > **Defining the repository infrastructure** > **Storing content** > **Storage area types** > **File storage areas**.

fixed storage area
A fixed storage area is a file storage area on a large-capacity, (possibly) write-once, fixed content device. Multiple fixed storage areas can share the same fixed content device, or a fixed storage area can have its own fixed content device.

For information about fixed storage areas, see the FileNet P8 help topic **Administering FileNet P8** > **Administering Content Platform Engine** > **Defining the repository infrastructure** > **Storing content** > **Storage area types** > **Fixed storage areas**.

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

For information about database storage areas, see the FileNet P8 help topic **Administering FileNet P8** > **Administering Content Platform Engine** > **Defining the repository infrastructure** > **Storing content** > **Storage area types** > **Database storage areas**.

A *file storage area* refers only to a network-accessible directory that is not on a fixed content device. The names of file storage areas and database storage areas must be unique within an object store. A file storage area is usually not on a machine where Content Platform Engine is installed.

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

"Configuring account settings on file servers" on page 39
The following table shows the operating system user and group on the machine where Content Platform Engine is to be deployed that are involved in securing file storage areas. The user and group must be defined in the directory service that the operating system uses to authenticate users, which is not necessarily the same directory service that Content Platform Engine Server uses.

"Configuring the remote access protocol on the client machine" on page 41
When configuring the remote file access protocol (NFS or CIFS), the client machine is the one where Content Platform Engine Server or IBM Content Search Services are running. Configuring the remote access protocol (NFS or CIFS) means designating a directory (where content is be stored) so that it appears to be on the a local file system of the client machine.

Configuring file servers for file storage areas:

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

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

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

To configure file servers for file storage areas:

1. Create or designate an existing top-level directory on the file server where file storage areas will reside.
2. Secure the directory so only Content Platform Engine Server and IBM Content Search Services can access it.
3. Expose the directory via the remote file access protocol that applies to the operating system of the file server.
4. (Best practice) Under the top-level directory, create a subdirectory for each file storage area you intend to create. If you decide to put a file storage area directly within a top-level directory, rather than in a subdirectory, and you later decide to create an additional file storage area on this file server, you will have to create another top-level directory for it, because you will not be able to use the previously created top-level directory.

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

Remote file access protocols:

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

The communication method between the Content Platform Engine machine and the file server depends on the operating systems running on the two machines. To upgrade a file store, you must use some type of CIFS, NFS, or DFS gateway.

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

Configuring account settings on file servers:

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

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

Table 5. User and group account names

Users and Groups	Role
Content Platform Engine operating system user (*cpe_os_user*)	The user under which Content Platform Engine server runs (typically, the user that starts Content Platform Engine server).

Table 5. User and group account names (continued)

Users and Groups	Role
Content Platform Engine operating system group (*cpe_os_group*)	The group that contains: • Content Platform Engine operating system user

"Configuring a file server based on AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris"
You need to create a directory and specify permissions for the Content Platform Engine operating system user before you can create a storage area.

"Configuring a Windows-based file server for a Windows client using CIFS" on page 41
You must configure security permissions on the directories where file storage areas are going to be located.

"Configuring a Windows-based file server for an AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris client using NFS" on page 41
To configure Windows Services for NFS, use the procedures in Microsoft documentation.

Configuring a file server based on AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris:

You need to create a directory and specify permissions for the Content Platform Engine operating system user before you can create a storage area.

To configure a file server based on AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris:

1. Log on to the file server as a user with read/write access to the device where you want to create a storage area.
2. Create or designate a directory for the first storage area where content will be stored (as in, `fsa1`). For example:

   ```
   $ mkdir /opt/filenet/file_stores/fsa1
   ```

3. Set the Content Platform Engine operating system user as the owner of `fsa1` and give group access permission to the Content Platform Engine operating system group. For example:

   ```
   chown cpe_os_user:cpe_os_group fsa1
   ```

   Tip: The UID (user ID) for *cpe_os_user* and the GID (group ID) for *cpe_os_group* on the file server must match the UID and GID for the same user and group on the machine where Content Platform Engine and Content Search Engine are running. This will normally be true if all machines use the same directory service, but they might be different.
4. Change the permissions on `fsa1` so that *cpe_os_user* and *cpe_os_group* both have read/write/execute privileges and all other users have no privileges:

   ```
   chmod 0770 fsa1
   ```

5. Via NFS, export `fsa1`. Alternatively, if the file server will host more than one file storage area, export the parent directory. In the latter case, for example, export `/opt/filenet/file_stores`, rather than `/opt/filenet/file_stores/fsa1`, and then create a separate subdirectory to serve as the root of each file storage area.

   Tip: It is a best practice to restrict trusted hosts to just those on which an instance of Content Platform Engine Server or Content Search Engine is

executing. Root access should also be restricted. Refer to the AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris administrator manual for details on exporting files in NFS.

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

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

To configure a Windows-based file server:

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

Configuring a Windows-based file server for an AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris client using NFS:

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

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

   Tip:
   - Windows Services for NFS is an optional Windows component.
   - As part of configuring Windows Services for NFS, you must set up a mapping of Windows users and groups to the AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris users and groups. When setting up the mapping for *cpe_os_user* and *cpe_os_group*, you must specify the same UID (UNIX user ID) and GID (UNIX group ID) that these accounts have on the machine where Content Platform Engine Server is installed.

Configuring the remote access protocol on the client machine:

When configuring the remote file access protocol (NFS or CIFS), the client machine is the one where Content Platform Engine Server or IBM Content Search Services

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

To configure remote access protocol:

To configure AIX, HPUX, Linux, or Solaris-based Content Platform Engine Server to communicate with an AIX, HPUX, Linux, Solaris or Windows file server via NFS:

1. On the application server where you are going to deploy Content Platform Engine Server, log on as the user who launched the application server.
2. Mount the exported NFS file system (from step 5 on page 40 of "Configuring a file server based on AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris" on page 40) onto a local directory on the Content Platform Engine machine. The mount point must be in the same location in the local file system on all machines where Content Platform Engine Server and IBM Content Search Services are going to be installed.

   For example, on Linux or AIX:

   ```
   mount filesrv:/opt/filenet/file_stores/home/filenet/file_stores
   ```

   where *filesrv* is the host name of the file server where the exported NFS file system is located.

   In this example, all Content Platform Engine Server machines (including machines that are part of the same server farm or cluster) must mount the remote file system at `/home/filenet/file_stores`.

Security administrator installation tasks

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

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

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

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

"Security planning considerations" on page 43
Information in this section is provided to assist in the security planning process but is not a complete description of any security feature or level of support.

"Configuring directory server" on page 45
The Security administrator must perform certain configurations on the directory server that will provide the authentication repository for your FileNet P8 system.

"Creating the application server administrative console user (WebSphere)" on page 46
An LDAP account to which you have granted the WebSphere Application Server administrative role.

"Creating Content Platform Engine directory server accounts" on page 46
Content Platform Engine requires several directory server accounts that must be provided during installation.

"Creating Application Engine or Workplace XT directory server accounts" on page 53
Directory server accounts are needed to administer Application Engine or Workplace XT.

Security planning considerations

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

Authentication and authorization are separate processes.

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

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

Logins are done through JAAS.

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

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

Determine single sign-on (SSO) requirements.

Content Platform Engine ability to use JAAS-based authentication means that if a single sign-on (SSO) provider writes a JAAS LoginModule for a supported application server, then clients of FileNet P8 applications hosted in that application server can use that SSO solution. This Information Center describes SSO configurations that you must make, for example to the `web.xml` file, but it does not provide specific instructions for installing or configuring your SSO provider. See *Single Sign-On Solutions for IBM FileNet P8* at ibm.com/redbooks for configuration information.

Determine Kerberos applicability.

You can use Kerberos for SSO authentication between .NET applications or other products that use it, provided you use Windows Active Directory as the directory server.

Decide how many authentication realms you require.

At least one authentication realm is required, which you create during an initial installation by running the Configuration Manager Configure LDAP task. After making sure the first realm is working properly, you can configure additional realms, depending on your security model and requirements.

Make sure that you have a directory service provider in place.
Directory services are provided by third-party directory servers. Refer to the *IBM FileNet P8 Hardware and Software Requirements* for the list of supported products.

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

Understand the users and groups required for FileNet P8.
All general administrative users and groups needing access to FileNet P8-based applications must reside in one of the supported directory servers. The planning and preparation tasks provide instructions for creating the administrative accounts required for installation and initial configuration.

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

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

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

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

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

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

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

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

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

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

Administrative security must be enabled

Configuration Manager does not change the state of WebSphere administrative security. If it was on before running Configuration Manager, then it stays on; if it was off before, then it stays off. The installation instructions contain steps for enabling WebSphere administrative security.

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

Configuring directory server

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

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

Configuring Windows Active Directory:

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

For a complete list of FileNet P8-supported Windows Active Directory features, refer to **Security** > **FileNet P8 Security** > **Directory service providers** > **Windows Active Directory**.

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

If you have an Active Directory failover configuration, you can configure FileNet P8 to follow this failover sequence whenever Content Engine attempts to authorize an already authenticated user. You can do this during Content Engine installation while running the Create a Directory Configuration wizard, or at any time after. See **Security** > **FileNet P8 Security** > **Directory service providers** > **Windows Active Directory** > **Failover Support (Active Directory)**.

Server Side Sorting (SSS) must be enabled. This is because FileNet P8 components call on Content Platform Engine to perform searches using a sorted paging mechanism. Note that SSS is normally enabled by default but is sometimes disabled due to concerns with performance.

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

To enable DNS forwarders:

1. On the machine that is configured as the Windows DNS Server, log on with an account that can configure the DNS components.
2. Start DNS. For example, on Windows 2008, choose **Start** > **All Programs** > **Administrative Tools** > **DNS** .
3. Right-click the ***your_computer_name*** container and select **Properties**.
4. Select the **Forwarders** tab and verify the check box for **Enable forwarders** is selected. If this feature is grayed out (unavailable), you must reconfigure your DNS server.
5. If you selected the check box, add an appropriate IP address and click **OK**. This IP address can be the IP address of a DNS server that allows traffic to the Internet.

Creating the application server administrative console user (WebSphere)

An LDAP account to which you have granted the WebSphere Application Server administrative role.

1. Create the following directory service account:

   WebSphere administrative console user

   Unique identifier
   appserver_console_user

   Description
   The *appserver_console_user* account is an LDAP account to which you have granted the WebSphere Application Server administrative role so that it can log in to the WebSphere admin console.

   If your WebSphere repository type is **Stand-alone LDAP registry**, when you run the Configuration Manager Configure LDAP task, enter the credentials of a valid LDAP user account to be the *appserver_console_user* for the entry labeled **Administrative console user name**. Configuration Manager grants this account WebSphere admin console administrative rights. Alternatively, you can enter an LDAP account that you have already configured as a console administrator.

   If your WebSphere Application Server LDAP repository type is **Federated repositories**, you can use the same user account defined as your *appserver_admin*. However, if you specify a user for the **Administrative console user name** that is different from *appserver_admin*, it must be unique across all federated realms including the WebSphere Application Server local file-based repository.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *appserver_console_user*.

Creating Content Platform Engine directory server accounts

Content Platform Engine requires several directory server accounts that must be provided during installation.

Accounts are referred to in documentation in the following ways:

- By a display name; for example, Database User Name. An account's display name is how the FileNet P8 user interface, such as a setup program or dialog box, refers to the account. Many accounts have both a display name and a variable.
- By a variable designator; for example *cpe_db_user*, using lower-cased italics and underscores. The variable is intended to show that you must designate your own account to act in the role described by the variable. The variable is the unique identifier for a particular account.

If you see a reference to an account that you do not understand, search the Information Center for that reference.

Create the following users and groups:

"Creating Content Platform Engine bootstrap account"
A directory service account that Content Platform Engine uses to establish a connection with the application server, access the application server's JNDI tree, look up the data sources for accessing the GCD, and start up Content Platform Engine's background tasks.

"Creating the GCD administrator" on page 49
A directory service account that has Full Control access to the Content Platform Engine domain object.

"Creating the object store administrator" on page 49
A directory service account that has Full Control access to a Content Platform Engine object store.

"Creating directory service user (Active Directory)" on page 50
A directory service account that Content Platform Engine uses to connect to the directory server.

"Creating the workflow system administrator" on page 51
A directory server user account that is used by workflow to create isolated regions.

"Creating workflow system groups" on page 52
Directory server groups whose members can manage workflows.

Creating Content Platform Engine bootstrap account:

A directory service account that Content Platform Engine uses to establish a connection with the application server, access the application server's JNDI tree, look up the data sources for accessing the GCD, and start up Content Platform Engine's background tasks.

1. Create the following LDAP account:

   Content Platform Engine bootstrap account

   Unique identifier
   cpe_bootstrap_admin

   Description
   The *cpe_bootstrap_admin*, also known as the Content Platform Engine system user, is an LDAP account that is stored in the `CEMPBoot.properties` file that is archived in the Content Platform Engine EAR file. You enter the bootstrap account's credentials while running the Configuration Manager's **Configure Bootstrap Properties** task. Any deployments of the EAR file for the same FileNet P8 domain must use the same credentials for the bootstrap account.

Content Platform Engine uses this account to authenticate to the application server and access the data sources named in the GCDConnection property. Content Platform Engine will not be able to start if this user is not able to authenticate.

In keeping with the principle of granting to an account only those permissions necessary to accomplish its purpose, do not use the *cpe_bootstrap_admin* account to serve in the role of *gcd_admin*. This can happen if you log in as *cpe_bootstrap_admin* the first time you start IBM Administration Console for Content Platform Engine following initial installation. Doing this places *cpe_bootstrap_admin* on the security tab of the FileNet P8 domain object with Full Control access rights. The result is that the *cpe_bootstrap_admin* is functioning as the *gcd_admin*. This is not a recommended configuration. If it is your configuration, consider using IBM Administration Console for Content Platform Engine to add a new *gcd_admin* account to the security of the FileNet P8 domain object, making sure to grant Full Control to the P8 domain, and then removing the *cpe_bootstrap_admin* from the security tab of the P8 domain.

To make sure it is not misused or locked out by accident, do not use *cpe_bootstrap_admin* as an all-purpose account. For example, if a user tried to log on to some other application using the *cpe_bootstrap_admin* account and provided the wrong password several times, thereby exceeding the number of allowable login failures, this account could be locked out of the directory server, depending on your local policies. This would mean that Content Platform Engine would not start.

If possible, exempt *cpe_bootstrap_admin* from policies requiring periodic password change.

If you change your system's login parameters so that the *cpe_bootstrap_admin* credentials are no longer valid, the result would be that Content Platform Engine will not be able to start. For example, if you modified the **User Short Name Attribute** or **User Search Filter**, in the application server's authentication provider and in IBM Administration Console for Content Platform Engine's **P8 Domain Properties** > **Modify Directory Configuration** > **User property sheet**, from `samAccountName` to `distinguishedName`, you would also need to use the Configuration Manager bootstrap task to make the same change in the Content Platform Engine EAR file.

Restriction: If you are deploying Content Platform Engine on an application server with federated user repositories and with multiple realms in your FileNet P8 domain, be sure that no two realms contain the same short name for this user; otherwise, this user will not be able to authenticate.

Minimum required permissions

The account must be a directory server account that resides in the realm that has been configured for Content Platform Engine authentication.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *cpe_bootstrap_admin*.

Related tasks:

"Creating the GCD administrator"
A directory service account that has Full Control access to the Content Platform Engine domain object.

Creating the GCD administrator:

A directory service account that has Full Control access to the Content Platform Engine domain object.

1. Create the following directory server account:

   GCD administrator

   Unique identifier
   gcd_admin

   Description
   The *gcd_admin* is able to create, modify, and delete Content Platform Engine domain resources.

   The *gcd_admin* account must reside in the directory service realm specified in Configuration Manager's Configure LDAP task.

   A GCD administrator can grant Full Control rights to additional users and groups, thereby making them GCD administrators as well. Being a GCD administrator does not automatically make you an *object_store_admin*, which is assigned on the object store's own property sheet.

   Log on to IBM Administration Console for Content Platform Engine as *gcd_admin* in order to:

   - Create the GCD by launching the Configure New Domain Permissions wizard the first time you start IBM Administration Console for Content Platform Engine to establish the FileNet P8 domain.
   - Carry out administrative tasks for the FileNet P8 domain.

   Minimum required permissions
   Use IBM Administration Console for Content Platform Engine to grant Full Control access to the Content Platform Engine domain object.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *gcd_admin*.

Creating the object store administrator:

A directory service account that has Full Control access to a Content Platform Engine object store.

1. Create the following directory server account:

   Object Store administrator and group

   Unique identifier
   object_store_admin or *object_store_admin_group*

   Description

A directory service account that can administer an object store by having Full Control access to it. You can also grant Full Control to an object store to group accounts, thereby making all members of the group object store administrators.

Each time a *gcd_admin* runs the Object Store Wizard, you are asked to specify the users and groups who should have administrative access to the object store. Each object store could therefore have a different set of object store administrators. Conversely, if you want the same groups to administer all object stores in the FileNet P8 domain, you must add them while creating each new object store using the Object Store Wizard. By default, the GCD administrator creating the object store also becomes an object store administrator, but you can remove it if your security design requires dedicated accounts for each object store and GCD.

Object store administrative rights do not include the ability to add, move, or remove object stores, fixed content devices, content cache areas, or any of the other FileNet P8 domain resources. These permissions are granted only to GCD administrators.

An object store administrator is not also a GCD administrator unless also specifically granted those permissions. This means that an object store administrator who is not also a GCD administrator would have to request that a GCD administrator create a new domain resource like an object store. Once these objects are created by the GCD administrator, however, the object store administrator can populate the object store with new classes and folders, store content in the file storage area, assign markings, and so on.

The list of object store administrators is available for viewing and modifying in IBM Administration Console for Content Platform Engine's **Object Store** > **Properties** > **Security** property page. You can add or remove users or groups from this list at any time later on.

Tip: Keeping the number of accounts assigned as object store administrators or object store users as small as possible will improve performance and simplify administration. The best way to do this is to use group accounts instead of large numbers of individual users. Groups can have as many members as you wish and can contain other groups.

Minimum required permissions
Use IBM Administration Console for Content Platform Engine to grant an *object_store_admin* or *object_store_admin_group* Full Control access to one or more object stores.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *object_store_admin* and *object_store_admin_group*.

Creating directory service user (Active Directory):

A directory service account that Content Platform Engine uses to connect to the directory server.

1. Create the following directory server account:

   Directory service (bind) user account (Active Directory)

   Unique identifier
   cpe_service_user

   Description
   Provide the fully qualified distinguished name of *cpe_service_user* as the directory service bind user name while running Configuration Manager and also when you run the IBM Administration Console for Content Platform Engine Directory Configuration Wizard.

   cpe_service_user performs the following roles:

   - Acts as the bind user specified by the application server to search through realms to authenticate a user when the user logs in to a Content Platform Engine client such as Workplace.
   - Acts as the user specified in the GCD that searches users and groups to authorize access to a specific FileNet P8 object after a user has been authenticated.

   Provide the fully qualified distinguished name of *cpe_service_user* as the LDAPBindDN while running Configuration Manager and also when you run the IBM Administration Console for Content Platform Engine Directory Configuration Wizard. Available for viewing and modifying in the IBM Administration Console for Content Platform Engine's Directory configuration tab.

   The Directory Service User cannot be accessed using referrals.

   Minimum required permissions
   Use Active Directory tools to grant *cpe_service_user* at least the following minimum rights to all entries (including user and group entries) in each security realm that is configured for your FileNet P8 domain:

   - Read access rights (specifically the Read All Properties permission) to the forest-wide configuration directory partition and the domain directory partition in each desired domain in the Active Directory forest. Because Authenticated Users by default is a member of the Pre-Windows 2000 Compatible Access group which has these permissions, you will need to assign the permissions to *cpe_service_user* only if the default is modified or Authenticated Users access rights are restricted.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *cpe_service_user*.

Creating the workflow system administrator:

A directory server user account that is used by workflow to create isolated regions.

The variable name for this account has been changed from earlier releases. It was formerly referred to as the *pe_region_admin*, but the permissions are the same.

1. Create the following account:

Workflow system admin

Unique identifier
workflow_system_admin

Description
A directory server user account that has Full Control access rights to the FileNet P8 domain, and has also been granted rights through its membership in the *workflow_admin_group*. The *workflow_system_admin* therefore has permissions equivalent to the *gcd_admin* but should be used only for workflow purposes.

Content Platform Engine permissions can be granted by a *gcd_admin* who uses IBM Administration Console for Content Platform Engine to add the *workflow_system_admin* to the ACL of the FileNet P8 domain and grant it Full Control.

Permissions are granted by using your directory server tools to add the *workflow_system_admin* to the *workflow_admin_group*. The *workflow_admin_group*'s permissions are configured while running IBM Administration Console for Content Platform Engine.

Minimum required permissions
Full Control access rights on the FileNet P8 domain.

Membership in the *workflow_admin_group*.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *workflow_system_admin*.

Creating workflow system groups:

Directory server groups whose members can manage workflows.

1. Create the following directory server groups:

   Workflow system administration group

   Unique identifier
   workflow_system_admin_group

   Description
   Members of this group are granted privileges for administering the workflow system by the Administration Console for Content Platform Engine.

   Workflow system configuration group

   Unique identifier
   workflow_system_config_group

   Description
   Members of this group are granted privileges for configuring the workflow system by the Administration Console for Content Platform Engine.

2. Provide these group names while configuring database connection points in Administration Console for Content Platform Engine.

3.  Record this value in your customized Installation and Upgrade Worksheet. To find these properties, search the worksheet for instances of *workflow_system_admin_group* and *workflow_system_config_group*.

Creating Application Engine or Workplace XT directory server accounts

Directory server accounts are needed to administer Application Engine or Workplace XT.

Accounts are referred to in documentation in the following ways:

- By a display name; for example, Database User Name. An account's display name is how the FileNet P8 user interface, such as a setup program or dialog box, refers to the account. Many accounts have both a display name and a variable.
- By a variable designator; for example *cpe_db_user*, using lower-cased italics and underscores. The variable is intended to show that you must designate your own account to act in the role described by the variable. The variable is the unique identifier for a particular account.

If you see a reference to an account that you do not understand, search the Information Center for that reference.

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

"Creating the Application Engine or Workplace XT administrator account"

Creating the Application Engine or Workplace XT administrator account:

1. Create the following directory server account:

   Application Engine or Workplace XT admin account

   Unique identifier
   ae_admin_user or *wpxt_admin_user*

   Description
   This account serves in the role of Application Engine or Workplace XT administrator. You will specify this account as a member of the Application Engine or Workplace XT administrator role when you set bootstrap preferences. The account must have a password.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *ae_admin_user* or *wpxt_admin_user*.

Database administrator installation tasks

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

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

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

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

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

- If you are installing in a non-English environment, review the information and procedures in Appendix A, "Preparing non-English environments for installing FileNet P8," on page 75 before you begin your preparation tasks.
- If you are installing Content Platform Engine in a highly available environment, it is important that you follow the high availability steps within the Content Platform Engine installation tasks. If Content Platform Engine becomes unavailable due to a system failure, the other components are affected as well.
- Review the information in Tuning FileNet P8 databases.

  "Creating Content Platform Engine database accounts"
  Use your database tools to create new or designate existing database accounts for Content Platform Engine.

  "Preparing Oracle server" on page 55
  Plan the Oracle installation and configuration, install the software, and configure database components for FileNet P8 components after reviewing the requirements.

Creating Content Platform Engine database accounts

Use your database tools to create new or designate existing database accounts for Content Platform Engine.

Accounts are referred to in documentation in the following ways:

- By a display name; for example, Database User Name. An account's display name is how the FileNet P8 user interface, such as a setup program or dialog box, refers to the account. Many accounts have both a display name and a variable.
- By a variable designator; for example *cpe_db_user*, using lower-cased italics and underscores. The variable is intended to show that you must designate your own account to act in the role described by the variable. The variable is the unique identifier for a particular account.

If you see a reference to an account that you do not understand, search the Information Center for that reference.

Create the following users and groups.

"Creating a Content Platform Engine database user for Oracle"
A database user account that Content Platform Engine uses to connect to Oracle databases containing the GCD and object stores.

Creating a Content Platform Engine database user for Oracle:

A database user account that Content Platform Engine uses to connect to Oracle databases containing the GCD and object stores.

1. Create the following database account after creating the database instance:

   Content Platform Engine database user (Oracle)

   Unique identifier
   cpe_db_user

Description

The tablespace owner accounts that Content Platform Engine uses to access Oracle. Use one account for the object store tablespaces and one for the GCD tablespace.

Minimum required permissions

Grant each *cpe_db_user* at least the following permissions:

- CREATE SESSION
- CREATE TABLE
- CREATE VIEW
- CREATE SEQUENCE
- Alter user set QUOTA UNLIMITED on all tablespaces used by db user
- SELECT on pending_trans$
- SELECT on dba_2pc_pending
- SELECT on dba_pending_transactions
- SELECT on DUAL
- SELECT on product_component_version
- SELECT on USER_INDEXES
- EXECUTE on dbms_xa

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *cpe_db_user*.

Preparing Oracle server

Plan the Oracle installation and configuration, install the software, and configure database components for FileNet P8 components after reviewing the requirements.

"Oracle database planning"
Determine whether Oracle database components will be dedicated to individual FileNet P8 components or shared and review other Oracle database requirements.

"Verifying that Oracle server is installed for FileNet P8" on page 56
To prepare your database before installing FileNet P8, you must install the Oracle software and configure the database components for your installation.

Oracle database planning:

Determine whether Oracle database components will be dedicated to individual FileNet P8 components or shared and review other Oracle database requirements.

In a shared configuration, multiple FileNet P8 components can store their data in a single database. Most components allow for data to be collocated. However, the best practice is to keep some in dedicated table spaces:

- The global configuration database: it is best practice to not share this table space.
- Object stores and their workflow system data although those part of a single application family can be collocated given the factors listed below. If you configure object stores in separate databases, you have more flexibility and control with security access, backup scheduling and execution, updates, and scheduled outages.
- Rendition Engine data
- IBM Content Navigator configuration data: sharing the IBM Content Navigator database with the global configuration database is not supported.

When you make the decision about whether to share a database for multiple components, consider the following factors:

- Database backup/recovery requirements should allow for the data that resides in a single database to be backed up and recovered together.
- Database security should allow for collocation of data.
- Sharing of a database might allow for more efficient usage of database resources like database connections.

See also the additional information in **Administering FileNet P8** > **Administering Content Platform Engine** > **Defining the repository infrastructure**.

For an Oracle database to be used by Rendition Engine, see the *IBM FileNet Rendition Engine Installation and Upgrade Guide*.

Make sure the machine hosting the database satisfies all pre-installation requirements specified in the Oracle installation documentation.

Refer to the *IBM FileNet P8 Hardware and Software Requirements* guide for required operating system and database patch sets, and service packs. The Oracle patches are available at the Oracle Web site. The Oracle patch installation procedure might be less complicated if you do it before you create any databases.

Content Platform Engine supports the Oracle Advanced Security functionality of secure data transfer across network protocol boundaries.

Plan to use locally managed table spaces. For performance reasons, IBM recommends that you create locally managed, rather than dictionary managed, table spaces. (The table spaces you create via Oracle Database assistant (dbca) are locally managed by default.)

There are no requirements to install Oracle client software on the Content Platform Engine if the database is remote.

Verifying that Oracle server is installed for FileNet P8:

To prepare your database before installing FileNet P8, you must install the Oracle software and configure the database components for your installation.

"Installing an Oracle database engine and creating databases" on page 57
Install the Oracle software and configure the database server. Create one or more databases, depending on whether one or more FileNet P8 components will share the database.

"Creating an Oracle table space for the Content Platform Engine GCD" on page 57
Create a table space for the Content Platform Engine global configuration database on Oracle.

"Creating Oracle table spaces for a Content Platform Engine object store" on page 58
Create Oracle table spaces for a Content Platform Engine object store.

"Configuring automatic transaction recovery" on page 60
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.

"Configuring Oracle XA transactions" on page 61
Configure Oracle XA transactions for Content Engine by running several Oracle SQL scripts.

Installing an Oracle database engine and creating databases:

Install the Oracle software and configure the database server. Create one or more databases, depending on whether one or more FileNet P8 components will share the database.

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

1. Choose the following from the list of available product components:
   - Oracle Server
   - Oracle Net Services
     - Oracle Net Listener
   - Oracle Development Kit
     - Oracle Call Interface (OCI)
   - Oracle Documentation (recommended)
2. Transaction Processing (also known as OLTP) is the required configuration type.
3. Start the listener and the Oracle database service/processes if they have not started automatically.
4. Create one or more databases, depending on whether one or more FileNet P8 components will share the database.

   FileNet P8 requires the following settings for Oracle databases:

   Database configuration type
   Transaction Processing (also known as OLTP) is the required configuration type.

   Server process type
   Dedicated Server Mode

   Database character set
   Set the regular character set to AL32UTF8. It is not required to set the national character set (NLS_NCHAR_CHARACTERSET) to a specific value. You can take the default.

   Record the values for the Database server name, Database name, and the Database port number in your customized Installation and Upgrade Worksheet. To find these properties, set the Autofilter for Column E **Installation or Configuration Program** for **CM: Configure GCD JDBC Data Sources**. Then set the Autofilter for Column D **ISV Component Vendor** to **Oracle**. In addition, set the Database server name, Database name, and the Database port number for the **CM: Configure Object Store JDBC Data Sources**.

Creating an Oracle table space for the Content Platform Engine GCD:

Create a table space for the Content Platform Engine global configuration database on Oracle.

At least two Oracle table spaces must be created for the Content Platform Engine. One table space is needed for the global configuration database user and one for a single object store user. Do not share the database user for the GCD with the object store database user or with the IBM Content Navigator.

1. Create a user (*cpe_db_user*), password, and default table space in the Oracle database for the global configuration database (GCD). See Creating Content Platform Engine database accounts for information about the user and required permissions.
2. Table space names must contain only alphanumeric and underscore characters. Names must start with an alphabetic character and must be at most 30 characters long. For performance reasons, specify locally managed, instead of dictionary managed, table spaces. (The table spaces you create with Oracle Enterprise Manager are locally managed by default.)

   The following table shows the recommended minimum sizes of the permanent and temporary table spaces for the GCD. (The table space names shown in the table are arbitrary.)

Table 6. Recommended table sizes for the GCD table spaces

Table space Name	Table space Type	Minimum Size	Description
gcd	Permanent	100 MB	Permanent table space for the GCD
tempgcd	Temporary	2 GB	Temporary table space for the GCD

3. 

   Record the values for the Database user name, the Database password, and the table space names in your customized Installation and Upgrade Worksheet. To find these properties, set the Autofilter for Column E **Installation or Configuration Program** for **CM: Configure GCD JDBC Data Sources**. Then set the Autofilter for Column D **ISV Component Vendor** to “Oracle”.

Creating Oracle table spaces for a Content Platform Engine object store:

Create Oracle table spaces for a Content Platform Engine object store.

Use your database tools to create table spaces for an object store. Do not share the database user for the GCD with the object store database user.

1. Create a user (*cpe_db_user*), password, and default table space in the Oracle database for an object store that Content Platform Engine will access. See Creating Content Platform Engine database accounts for information about the user and required permissions.
2. Create the required and any optional table spaces for a Content Platform Engine object store. Note that the index and LOB table spaces are optional.

   Table space names used by Content Platform Engine must contain only alphanumeric and underscore characters. Names must start with an alphabetic character and must be at most 30 characters long.

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

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

Table 7. Recommended table space names, types, and minimum sizes

Table space Name	Table space Type	Minimum Size (MB)	Description
data_ts	Permanent	400	This is the default name of the data table space used by Content Platform Engine.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, use the Autofilter drop-down arrow in Column F, **Property or Parameter (in user interface)**, to select **Data table space name**.
index_ts (optional)	Permanent	300	This is the default name of the optional default index table space used by Content Platform Engine. If you do not create an index table space, the data table space will be used for indexes.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, use the Autofilter drop-down arrow in Column F, **Property or Parameter (in user interface)**, to select **Index table space name**.

Table 7. Recommended table space names, types, and minimum sizes (continued)

Table space Name	Table space Type	Minimum Size (MB)	Description
lob_ts (optional)	Permanent	300	This is the default name of the optional default LOB table space used by Content Platform Engine. If you do not create a LOB table space, the data table space will be used for LOB data.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, use the Autofilter drop-down arrow in Column F, **Property or Parameter (in user interface)**, to select **LOB table space name**.
temp_ts	Temporary	2 GB	This is the default temporary table space, required for Content Platform Engine use.

3.

Record the values for the Database user name, the Database password, and the table space names in your customized Installation and Upgrade Worksheet. To find these properties, set the Autofilter for Column E **Installation or Configuration Program** for **CM: Configure Object Store JDBC Data Sources (object store 1)**. Then set the Autofilter for Column D **ISV Component Vendor** to "Oracle ". If your customized worksheet shows more than one object store, create and provide values for all of them.

Configuring automatic transaction recovery:

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

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

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

Configuring Oracle XA transactions:

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

To configure XA transactions:

1. Log on the Oracle database as either SYSOPER or SYSDBA.
2. Locate and run the `initxa.sql` script in the `ORACLE_HOME\javavm\install` directory.
3. If the script fails to run because the database memory space is too small, locate and run the `initjvm.sql` script in the `ORACLE_HOME\javavm\install` directory. Additional memory-related parameters might need to be adjusted to successfully run this script.

Application Server administrator installation tasks

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

Content Platform Engine, IBM FileNet Workplace XT, and Application Engine are Java EE application server-based applications. You must install these applications in a homogeneous Java EE environment in which all of your application servers and their version numbers are identical.

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

- Workplace XT
- Application Engine / Workplace

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

If the application server where you are deploying Content Platform Engine is running on most 64-bit JVMs, it is a best practice to create no more than 150 object stores. However, if sufficient system and database resources are available, IBM WebSphere Application Server 7.0 or higher with the 64-bit IBM JVM and WebSphere Compressed Reference Technology supports up to 500 object stores.

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

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

If you are installing in a non-English environment, review the considerations and procedures in Appendix A, "Preparing non-English environments for installing FileNet P8," on page 75 before you begin your preparation tasks.

See the FileNet P8 help topic **Security** > **FileNet P8 Security** > **Authentication** for reference information about support for EJB and Web Services transports.

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

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

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

"Creating application server accounts" on page 63
Create new or designate existing application server accounts .

"Configuring WebSphere for Content Platform Engine" on page 64
You must prepare IBM WebSphere Application Server before you install Content Platform Engine. You must create a WebSphere profile for the Content Platform Engine application and set the environment variables for the database connection.

"Configuring application servers (high availability environments)" on page 68
You must configure application servers for high availability.

"Configuring WebSphere Application Server for Application Engine or Workplace XT" on page 69
You must install WebSphere Application Server on the machine where you are going to install and deploy Application Engine or Workplace XT.

"Starting or stopping an application server instance" on page 69
You need to be able to start or stop an application server instance when working with Content Platform Engine or Application Engine.

"Resolving the names of existing data sources" on page 70
You must create data sources for the global configuration database and your object store databases. Configuration Manager does not create a new data source with the same name as that of an existing data source. If you want to reuse a data source name, you must resolve data source naming conflicts before using Configuration Manager to configure the JDBC data sources.

"Application Engine/Workplace XT in a highly available environment" on page 70
You can install and configure Application Engine/Workplace XT in a highly available FileNet P8 environment to provide access to the FileNet P8 content on the corresponding Application Engine/Workplace XT Web application.

"Accessing the information center" on page 72
The base documentation URL identifies the server where the IBM FileNet P8 information center is located. You must decide whether you want to access the public information center on www.ibm.com or access a locally installed information center.

Creating application server accounts

Create new or designate existing application server accounts .

Accounts are referred to in documentation in the following ways:

- By a display name; for example, Database User Name. An account's display name is how the FileNet P8 user interface, such as a setup program or dialog box, refers to the account. Many accounts have both a display name and a variable.
- By a variable designator; for example *cpe_db_user*, using lower-cased italics and underscores. The variable is intended to show that you must designate your own account to act in the role described by the variable. The variable is the unique identifier for a particular account.

If you see a reference to an account that you do not understand, search the Information Center for that reference.

"Creating the application server administrator"
An application server administrator used while configuring Content Platform Engine.

Creating the application server administrator:

An application server administrator used while configuring Content Platform Engine.

1. Create the following application server account:

   Application server administrator

   Unique identifier
   appserver_admin

   Description

   WebSphere Application Server

   In Configuration Manager, when you run the Set Properties for WebSphere Application Server task, enter the credentials of the *appserver_admin* account in the field labeled **Application server administrator user name**. Configuration Manager uses the *appserver_admin* account to run configuration tasks.

   WebSphere administrative security is enabled
   You have two options for creating the *appserver_admin* user account. You can use the local file-based account usually defined while creating the WebSphere profile. Or, you can use WebSphere tools to grant administrative rights to an LDAP account and optionally remove the file-based account created earlier.

   The *appserver_admin* user account must have WebSphere administrator permissions throughout the Content Platform Engine

installation process. Afterwards, you can reduce the account to a lesser role, such as Configurator.

WebSphere administrative security is not enabled
If you decide not to enable WebSphere administrative security during profile creation, then no special credentials are required to log in to the WebSphere admin console. You can enter any string into the Configuration Manager field labeled **Application server administrator user name**. However, remember that to run Content Platform Engine, WebSphere administrative security must be enabled. When you do enable it and the WebSphere admin console requests an account to use as the admin user, enter the *appserver_admin*.

2.  Record this value in your customized Installation and Upgrade Worksheet. To find this property, search the worksheet for instances of *appserver_admin*.

Configuring WebSphere for Content Platform Engine

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

Content Platform Engine is an enterprise application running on a Java application server and should be made highly available in a high availability environment. In this configuration, an administrative server manages a number of application server instances. Applications and configuration changes are implemented by using an administrative server/interface and sent to each cluster node. In this type of configuration the application server software provides the components to build and deploy the highly available enterprise application.

1. "Creating the WebSphere profile for Content Platform Engine" on page 65
   You must create an IBM WebSphere Application Server profile for Content Platform Engine if you do not already have a profile.
2. "Specifying the WebSphere environment variables" on page 65
   You must specify the IBM WebSphere Application Server environment variables so that Content Platform Engine can access its databases.
3. "Setting the primary administrative user name" on page 67
   If you are using IBM WebSphere Application Server federated repositories for LDAP authentication, you must ensure that the name you entered for the WebSphere Application Server primary administrative user name is unique across all realms.
4. "Setting host aliases for deployment on multiple servers" on page 67
   If you are deploying Content Platform Engine to multiple IBM WebSphere Application Server servers on the same WebSphere node, you must define the host alias and port numbers.
5. "Setting permissions for the Configuration Manager user" on page 67
   Configuration Manager must be run by an operating system account that has been granted certain directory permissions.
6. "Configuring the load-balancer or proxy server" on page 68
   You can configure the load-balancer or proxy server to manage user requests over multiple application servers.

7. “Preparing for database failover support” on page 68
   You need to compare the default parameter values for database failover and determine whether to retain them.

Creating the WebSphere profile for Content Platform Engine:

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

To create the WebSphere profile for Content Platform Engine:

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

Option	Description
HPUX, Linux, Solaris	`/opt/IBM/WebSphere/AppServer/bin/manageprofiles.sh`

2. 

   Record application server values in your customized Installation and Upgrade Worksheet. To find these properties, use the Autofilter drop-down arrow in Column E, **Installation or Configuration Program**, to select **CM: Create New Installation Profile**. Then use the Autofilter drop-down arrow in Column D, **ISV Component Vendor**, to select “WebSphere”.
3. Grant write permission to the group *cpe_appserver_install_group* (the user who runs Configuration Manager belongs to this group) on the following files in the `logs` directory of the WebSphere profile for Content Platform Engine:
   - `wsadmin.traceout`
   - `wsadmin.valout`

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

Option	Description
HPUX, Linux, Solaris	`/opt/IBM/WebSphere/AppServer/profiles/`*`profile_name`*`/logs`

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

Specifying the WebSphere environment variables:

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

See *IBM FileNet P8 Hardware and Software Requirements* for information on the JDBC driver file for the database type that you need for the global configuration database (GCD) or for an object store or Case Analyzer store you create later. The version of the JDBC driver file must match the version of the JDK on the system where WebSphere Application Server is installed.

To specify the WebSphere environment variables:

1. Install JDBC drivers on each WebSphere Application Server node where you will deploy Content Platform Engine.
   a. Obtain the JDBC drivers for your database type.

Oracle Access the http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html Web site and find the JDBC driver file that matches the version of the JDK on the system where WebSphere Application Server is installed.

b. Extract and copy the JDBC driver file to the following suggested location:

AIX, HPUX, Linux, Solaris
`/opt/jars`

Do not copy the file to `...WebSphere/AppServer/lib/ext`.

2. Start the WebSphere Application Server administrative console and log on to your Content Platform Engine profile as *appserver_console_user*, the Administrator Console User and complete the following substeps to configure the Content Platform Engine nodes or cluster (if applicable).
   a. Navigate to **Environment** > **WebSphere Variables**.
   b. Select **Cell scope** from the **All scopes** list.
   c. Set the value of the variable to the JDBC driver path that you specified when you installed the JDBC drivers on the IBM WebSphere Application Server machine. (If the variable does not exist, create it and then set its value.)
   d. Select **Node scope** from the **All scopes** list. In a cluster configuration, select **Node scope** for all the nodes in the Content Platform Engine cluster.
   e. In the table of substitution variables, click the ***item name*** in the **Name** column that corresponds to the JDBC environment variable for your database type in the Database environment variables table below.

Table 8. Database environment variables

Database	JDBC Environment Variable
Oracle	`ORACLE_JDBC_DRIVER_PATH`

   f. Set the value of the ***name*_JDBC_DRIVER_PATH** item to the JDBC driver path you specified (`/opt/jars` or `C:\jars`).
   g. Optional: Select **Server scope** from the **All scopes** list. This step is not required unless you defined the JDBC_DRIVER_PATH variable at the server scope level.
   h. In the table of substitution variables, click the ***item name*** in the **Name** column that corresponds to the JDBC environment variable for your database type in the Database environment variables table.
   i. Set the value of the ***name*_JDBC_DRIVER_PATH** item to the JDBC driver path you specified (`/opt/jars` or `C:\jars`).
   j. Save your changes to the master configuration.
3. Navigate to **Servers** > **Application servers** > *server1* > **Java and Process Management** > **Process Definition** > **Java Virtual Machine**, and set the initial and maximum heap sizes, where *server1* is the name of the server where you will deploy Content Platform Engine.
   a. Set the values for the initial and maximum heap sizes:

Table 9. Values for initial and maximum heap size

Parameter	Value (in MB)
Initial Heap Size	At least 512

Table 9. Values for initial and maximum heap size (continued)

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

b. Save your changes to the master configuration.

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

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

Setting the primary administrative user name:

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

Setting host aliases for deployment on multiple servers:

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

To set the host alias:

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

Setting permissions for the Configuration Manager user:

Configuration Manager must be run by an operating system account that has been granted certain directory permissions.

1. Set permissions for the Configuration Manager user (*config_mgr_user*) on the WebSphere Application Server profile directory and all its subdirectories where Content Platform Engine will be deployed:

Option	Description
AIX, HPUX, Linux, Solaris	Read, write, and execute permissions

2. Set write permission for the Configuration Manager user on the WebSphere `lib` directory, for example `/opt/IBM/WebSphere/AppServer/lib`.

Configuring the load-balancer or proxy server:

You can configure the load-balancer or proxy server to manage user requests over multiple application servers.

Load-balancers and proxy-servers are typically used to direct users to different instances throughout a highly available application server configuration. When one server goes down the system automatically redirects the user to another running server instance.

The following are requirements for configurations by using a load-balancer or proxy-server:

- Session affinity is required for Application Engine and Workplace XT only.
- Virtual server name.

  If you use a load-balancer or proxy server in this configuration you must use the virtual name when performing installation steps that require a server name for a Content Platform Engine server, with the exception of IBM Administration Console for Content Platform Engine and other administrative applications.

Preparing for database failover support:

You need to compare the default parameter values for database failover and determine whether to retain them.

If you enable it to do so, Configuration Manager automatically assigns default values to the database failover parameter values when it runs the tasks to configure JDBC data sources for the global configuration database and object stores.

The following table shows the default values that Configuration Manager assigns to the database failover parameters.

Table 10. Retries for new connections

Parameter	Value
Number of retries for new connections	100
Retry interval for new connections	3 seconds
Retry interval for existing connections	0 seconds

To determine whether to let Configuration Manager set these values, you need to compare these default values with the values that are optimized for your database cluster. If you enableConfiguration Manager to assign default values, you can still change them before you deploy Content Platform Engine.

Configuring application servers (high availability environments)

You must configure application servers for high availability.

Configure the application server on each node with the following modification:

- WebSphere Application Server:

  Follow the instructions for configuring WebSphere Application Server for Content Engine, but set the JDBC parameters for the nodes by using the administrative console, not the individual servers.

Configuring WebSphere Application Server for Application Engine or Workplace XT

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

Application Engine or Workplace XT can be collocated with Content Platform Engine as long as the server is appropriately sized. However, each instance of the Application Engine or Workplace XT and each instance of the Content Platform Engine must run in its own JVM. For assistance in sizing your system, access the IBM FileNet P8 Platform support site.

To configure WebSphere Application Server:

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

Starting or stopping an application server instance

You need to be able to start or stop an application server instance when working with Content Platform Engine or Application Engine.

To start or stop an application server instance:

Depending on your application server type, run one of the following commands to start or stop an application server instance:

Table 11. How to start or stop an application server instance

Application server type	Command to start an application server instance	Command to stop an application server instance
WebSphere Application Server	**startServer**	**stopServer**
JBoss Application Server	**run**	**stop**
Oracle WebLogic Server	**startWebLogic**	**stopWebLogic**

In a high availability environment, when instructed to start or stop an application server instance, start or stop the nodes unless otherwise specified.

Resolving the names of existing data sources

You must create data sources for the global configuration database and your object store databases. Configuration Manager does not create a new data source with the same name as that of an existing data source. If you want to reuse a data source name, you must resolve data source naming conflicts before using Configuration Manager to configure the JDBC data sources.

Complete this procedure only if you already created data source names by using your application server administration tools, and you want to use Configuration Manager to create data sources with the same names.

To resolve the names of existing data sources:

1. Use your application server administration tools to determine if the data source names that you selected already exist.
2. If you have a duplicate data source name that you want to use, manually delete the existing data source from your application server. See your application server documentation for more information.

Application Engine/Workplace XT in a highly available environment

You can install and configure Application Engine/Workplace XT in a highly available FileNet P8 environment to provide access to the FileNet P8 content on the corresponding Application Engine/Workplace XT Web application.

Complete these additional Application Server Administrator planning and preparation tasks for Application Engine/Workplace XT in a highly available environment.

"Configuring the application server for Application Engine/Workplace XT in a highly available environment"
You can create clusters of supported application servers.

"Configuring load-balancer or proxy server" on page 71
Before installing and configuring Application Engine or Workplace XT in a highly available environment, verify that your load balancer or proxy server has been set up correctly.

"Planning for Workplace/Workplace XT shared settings" on page 71
You can store Workplace/Workplace XT settings in a shared configuration directory for high availability environments. This directory can reside on a shared device as needed.

Configuring the application server for Application Engine/Workplace XT in a highly available environment:

You can create clusters of supported application servers.

Application Engine/Workplace XT is an enterprise application running on a Java application server and should be made highly available by using either of the following configurations:

Application Server clusters

- (WebSphere, WebLogic) Managed Application Server Clusters

  An administrative server manages a number of application server instances. Applications and configuration changes are implemented by using an administrative server/interface and sent to each cluster node.

In this type of configuration the application server software provides the components to build and deploy the highly available enterprise application.

Farm of independent Application Server instances.

A number of separate server instances run independently behind a load-balancer or proxy device. No central administration server is used. You must install and deploy on each farm node.

Configuring load-balancer or proxy server:

Before installing and configuring Application Engine or Workplace XT in a highly available environment, verify that your load balancer or proxy server has been set up correctly.

- A load balancing or proxy device will typically direct users to different instances throughout the group of highly available servers. When one server goes down a user is automatically directed to an already running instance.
- The load-balancing device can be a hardware or software implementation of a proxy or load-balancer.

  See the application server software's hardware and software support requirements to determine the supported load-balancing or proxy device supported for you configuration.
- Application Engine and Workplace XT do not support directory security when using IIS as a proxy in front of WebSphere Application Server.

Identify the Base URL for the load balancer or proxy server When installing any components that request the URL of a deployed Workplace or Workplace XT instance in a highly available configuration, you must use the URL that directs users to your load-balancing or proxy device.

Tip: Do not specifying a single Application Engine/Workplace XT server. This will introduce a single point of failure in the environment.
If you are using load-balancer or proxy device in your configuration you must use the load-balancer or proxy device to log on to Workplace or Workplace XT for the first time. Doing this ensures that the Base URL setting, which must be set to the load-balancer or proxy URL, is correctly set.
If the application is deployed to a farm of application servers, and a load-balancer is configured for this farm, then a URL could be:

Application Engine: `http://`*`loadbalancer URL`*`:`*`loadbalancer port`*`/Workplace`

Workplace XT: `http://`*`loadbalancer URL`*`:`*`loadbalancer port`*`/WorkplaceXT` Use this URL when completing the installation steps.

Planning for Workplace/Workplace XT shared settings:

You can store Workplace/Workplace XT settings in a shared configuration directory for high availability environments. This directory can reside on a shared device as needed.

- If you deploy your Workplace/Workplace XT Web application as a Windows service on WebSphere, do not use mapped drives to reference shared configuration folders. Instead, use a UNC share. Note that UNC shares cannot be Windows administrative shares such as `\\host\c$`.
- If the share is mountable the mount must be online when Workplace/Workplace XT is started and accessed.

- If the shared configuration directory is not accessible an error page is returned when a user tries to access the Workplace/Workplace XT sign-in page.
- Aside from the shared configuration directory no other Application Engine/Workplace XT software has to reside on shared storage.
- Overwriting of configuration files on subsequent installations.
  - If you are performing an installation by using a shared configuration directory be aware that all installations of Application Engine/Workplace XT will replace any files that exist in the shared configuration directory.
  - If an installation has been completed and settings such as the bootstrap information have already been set then any subsequent installations by using the same shared configuration directory will result in the files being overwritten, losing any settings that have been made.

    To preserve the settings in the shared configuration directory you should back up the files in the shared configuration directory and restore them when you have completed the installation.

    Remember: This is not an issue for configurations where all Application Engine/Workplace XT installations are performed at the same time, but for cases where the installer must be run again (to add a node to the configuration for example).

Accessing the information center

The base documentation URL identifies the server where the IBM FileNet P8 information center is located. You must decide whether you want to access the public information center on www.ibm.com or access a locally installed information center.

The simplest way to access documentation is by using the IBM FileNet P8 public information center on www.ibm.com. However, if this is not possible, for example because your application is in an environment where internet access is not available, you can install documentation on a local application server and deploy the help as a web application as described in the IBM FileNet P8 documentation. The following table compares the options.

Table 12. Comparing public and local information centers

	Public information center	**Local information center**
Requires internet access	Yes	No
Requires local application server	No	Yes
Supports mixed versions of IBM FileNet P8 components	No	Yes
Is customizable	No	Yes

If you install the information center locally, you can use an application server that is uniquely dedicated for that purpose, or you can use one that is prepared for Content Platform Engine, Application Engine, or Workplace XT.

To determine the base documentation URL for your information center:

1. Determine the initial portion of the base documentation URL for your information center as follows, depending on which information center option you have chosen to use:

Option	Description
Public information center on ibm.com	`http://pic.dhe.ibm.com/infocenter/p8docs/v5r2m0/topic/`
Locally installed information center	`http://`*`server-name`*`:`*`port`*`/`*`application-name`*`/topic/` *`server-name`* The name of the server where the IBM FileNet P8 Platform documentation information center will be installed. *`port`* The optional port number. *`application-name`* The name of the deployed IBM FileNet P8 documentation application. The application name is typically `p8docs`. For a server-name of `myserver`, a port of `8080`, and an application-name of `p8docs`, the initial portion of the base documentation URL would be `http://myserver:8080/p8docs/topic/`.

2.

Record the base documentation URL in your customized Installation and Upgrade Worksheet for each instance of that property for each component that requires it. To find this property, search the worksheet for instances of **Documentation server URL** or **Documentation URL** in Column F, **Property or Parameter (in user interface)**.

Option	Description
Workplace XT	Append `com.ibm.p8.xt.user.doc/` to the initial portion of the base documentation URL. For example, the base documentation URL for Workplace XT would be `http://myserver:8080/p8docs/topic/com.ibm.p8.xt.user.doc/`.
Workplace	Append `com.ibm.p8.doc/` to the initial portion of the base documentation URL. For example, the base documentation URL for Workplace would be `http://myserver:8080/p8docs/topic/com.ibm.p8.doc/`.
All other components	Enter only the initial portion of the base documentation URL, for example, `http://myserver:8080/p8docs/topic/`.

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

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

By default, Content Platform Engine uses Oracle Outside In Search Export for text extraction on PDF documents. For right-to-left language PDF documents, you can optionally use Apache PDFBox technology for text extraction. To use PDFBox, you set a JVM property on Content Platform Engine. For more information, see the topics in **Administering FileNet P8** > **Administering Content Platform Engine**.

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

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

"Database administrator" on page 76
The FileNet P8 database administrator installation role includes configuring database installations and table spaces, and creating database accounts.

"IT administrator" on page 76
Depending on the operating system, the IT administrator installs either a localized version of the operating system, or the operating system language pack.

"FileNet P8 administrator" on page 77
The FileNet P8 administrator configures Process Task Manager for Application Engine and Workplace XT.

"Limitations on installing in a non-English environment" on page 78
There are certain limitations on installing FileNet P8 in non-English environments.

Application Server administrator

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

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

Configuring character encoding on WebSphere Application Server

FileNet P8 requires the following character encoding settings.

1. Set the com.ibm.CORBA.ORBCharEncoding property to UTF8.
2. Set the com.ibm.websphere.security.BasicAuthEncoding property to UTF8.

Security administrator

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

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

Extended characters and user names

Note the following considerations for localized FileNet P8 accounts.

- With Microsoft Active Directory, Content Platform Engine supports extended characters in user names and passwords for all Latin1, Latin2, Arabic, and double-byte languages
- Content Platform Engine does not support extended (double-byte) characters in LDAP attributes for authentication purposes. These attributes include, but are not limited to, such items as cn (common name), ou (organizational unit), or dc (domain component). ASCII characters are required for these attributes.
- WebDAV and the SSO environment do not support non-ASCII user names.
- The Content Platform Engine locale must match directory server locale to manage non-ASCII user names correctly.
- AIX, HPUX, HPUXi, Linux, Linux on System z, and Solaris systems can support Latin1, Latin2, Arabic, and double-byte user names simultaneously.

Database administrator

The FileNet P8 database administrator installation role includes configuring database installations and table spaces, and creating database accounts.

"Installing Oracle server"
Create the database using the AL32UTF8 database character set.

Installing Oracle server

Create the database using the AL32UTF8 database character set.

The collation settings must match the language settings on the system. Searching for other languages that do not match the database collation setting will result in invalid search and sort results.

Set the regular character set to AL32UTF8. It is not required to set the national character set (NLS_NCHAR_CHARACTERSET) to a specific value. You can take the default. The national character set applies to the data types NCHAR / NVARCHAR2 / NCLOB which the Content Platform Engine does not use.

IT administrator

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

"Operating system considerations" on page 77
In addition to any operating system platforms, the IT administrator must consider the FileNet P8 components that will be installed in a non-English environment.

"Configuring locale and support for other languages in an AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris system" on page 77
Add language fonts for your AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris operating system if you need to display an X Window desktop in a specific-language user interface. Follow your operating system administration guide to install other language fonts.

Operating system considerations

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

Application Engine or Workplace XT

Application Engine and Workplace XT can be installed:

- In any locale on any of the supported AIX, HPUX, HPUXi, Linux, Linux on System z, and Solaris platforms

Remember: The Application Engine and Workplace XT setting must match the Content Platform Engine setting. Otherwise, workflows can experience unexpected problems such as errors related to the way characters display.

Content Platform Engine

Content Platform Engine can be installed:

- In any locale on any of the supported AIX, HPUX, HPUXi, Linux, Linux on System z, and Solaris platforms

If you intend to install Content Platform Engine in a path that contains non-English characters, you must specify each such character in the path by its escaped Unicode representation (for example, `\u4EF6`).

Configuring locale and support for other languages in an AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris system

Add language fonts for your AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris operating system if you need to display an X Window desktop in a specific-language user interface. Follow your operating system administration guide to install other language fonts.

Configure your X-session manager application to use the fonts for your operating system. Refer to your X-session manager application administration guide for details on adding fonts or accessing them on the server. Make sure to add a locale for the language being used and also to add the UTF-8 locale. Set the server locale to the UTF-8 locale.

FileNet P8 administrator

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

"Configuring Process Task Manager for Application Engine and Workplace XT"
In AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris environments, verify that the LC_TIME and LC_MESSAGES environment variables are set to "C" before you run Process Task Manager in Application Engine or Workplace XT. Failure to set these variables can result in an error in a non-English locale.

Configuring Process Task Manager for Application Engine and Workplace XT

In AIX, HPUX, HPUXi, Linux, Linux on System z, or Solaris environments, verify that the LC_TIME and LC_MESSAGES environment variables are set to "C" before you run Process Task Manager in Application Engine or Workplace XT. Failure to set these variables can result in an error in a non-English locale.

Limitations on installing in a non-English environment

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

Important: For additional limitations, see the Release Notes.

Application Engine, Workplace XT, or Process Task Manager

If Application Engine, Workplace XT, or Content Platform Engine is installed on any operating system other than Windows, Process Task Manager (vwtaskman), takes too long to launch when it is run under a UTF-8 locale using remote CDE shells such as X Window, Exceed, Xmanager, etc). Verify that the X Window application can handle Unicode fonts to fix this problem. Also, verify that any independent software vendor applications are configured correctly. The command-line interface functionality is not affected.

Publishing

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

Process Designer

To import a user defined XSD file containing non-English characters in Process Designer, run the following command to convert characters to the Unicode encoding format to match an operating system other than Windows Content Platform Engine in a UTF-8 locale, then import the XSD file into Process Designer.

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

Composite Platform Installation Tool

The Composite Platform Installation Tool, which installs a single-server FileNet P8 environment, is not supported on Simplified Chinese Microsoft Windows 2008 R2.

IBM Case Manager

IBM Case Manager requires language support on the Content Platform Engine server to support authored language solution templates.

Important: Case Manager Builder displays unreadable characters in Step Editor for double-byte (east Asian) characters. To resolve the problem, install the correct language pack on the Case Manager Builder Server.

IBM FileNet Image Services

In IBM FileNet Image Services, navigate to **fn_edit** > **System Attributes** > **Client Character Set**, enter `MS932`, and restart the IBM FileNet Image Services service. This configuration setting ensures that Japanese characters in property values are synchronized in both directions between IBM FileNet Image Services and Content Platform Engine.

Appendix B. FileNet P8 ports

Port numbers that are used by FileNet P8 components are listed along with information such as communication protocols, the source and target components, whether load balancers are supported, and other information specific to the component ports.

The following conditions apply to the ports that are used by the FileNet P8 components:

- The port numbers are default values, but can be changed to other unique port numbers.
- The default port number and communication protocol must be open on the target server.
- Replies and responses to the requestor are made unless specified otherwise.
- No long-lived connections are established between FileNet P8 components unless specified for the port. The connection is closed after the initiator opens a connection with the recipient and the recipient responds.

"Content Platform Engine ports"
The Content Platform Engine ports information is presented in multiple tables that list the port names, port numbers, communication protocols, and descriptions.

"Application Engine and Workplace XT ports" on page 82
The Application Engine and Workplace XT servers ports table lists the port names, port numbers, communication protocols, and description for its use.

Content Platform Engine ports

The Content Platform Engine ports information is presented in multiple tables that list the port names, port numbers, communication protocols, and descriptions.

Table 13. Content Platform Engine ports

Port name	Application level protocol	Transport level protocol	Default port number	From	To
LDAP	LDAP	TCP	389	Content Platform Engine server	Directory server
LDAP (SSL)	LDAP	TCP	636	Content Platform Engine server	Directory server
LDAP Global Catalog	LDAP	TCP	3268	Content Platform Engine server	Global Catalog server
LDAP Global Catalog (SSL)	LDAP	TCP	3269	Content Platform Engine server	Active Directory Global Catalog server
WebSphere WSI	HTTP	TCP	9080	Content Platform Engine client	Content Platform Engine server

Table 13. Content Platform Engine ports (continued)

Port name	Application level protocol	Transport level protocol	Default port number	From	To
WebSphere WSI (SSL)	HTTPS	TCP	9443	Content Platform Engine, Enterprise Manager, Component Manager (Workplace XT), or a custom application	Content Platform Engine server
WebSphere EJB	IIOP	TCP	2809	Content Platform Engine client	Content Platform Engine server

Table 14. Content Platform Engine ports - continued

Port name	Supports SSL?
LDAP	No
LDAP (SSL)	Yes
LDAP Global Catalog	No
LDAP Global Catalog (SSL)	Yes
WebSphere WSI	No
WebSphere WSI (SSL)	Yes
WebSphere EJB	Yes

Table 15. Content Platform Engine ports - continued

Port name	Notes
LDAP	The port is on the directory server and specified on the Content Platform Engine server for authentication.
LDAP (SSL)	The port is on the directory server and specified on the Content Platform Engine for authentication through SSL.
LDAP Global Catalog	The port is used for the Active Directory only.
LDAP Global Catalog (SSL)	The port is used for the Active Directory only.
WebSphere WSI	The port is on the WebSphere Application Server for Content Platform Engine. The port is used for communication with Content Platform Engine by clients through WSI.
WebSphere WSI (SSL)	HTTPS over SSL or TLS. (Port 9080 is the non-SSL HTTP port.) Content Platform Engine and custom applications use WSI. FileNet Enterprise Manager and Component Manager use SOAP. Port 9443 is on the WebSphere Application Server for Content Platform Engine. The port is used for communication with Content Platform Engine by clients through WSI.
WebSphere EJB	The port is on the WebSphere Application Server for Content Platform Engine. The port is used for communication with Content Platform Engine by clients through EJB and for request forwarding between Content Platform Engine servers.

Table 16. Content Platform Engine ports

Port name	Application level protocol	Transport level protocol	Default port number	From	To
SMTP (Email Notification)	SMTP	TCP	25	Content Platform Engine server	Email server
Process Task Manager / Component Manager version 1 communications port	RMI	TCP	32771 (for version 1 of Component Manager)	Process Task Manager on the Application Engine server	Component Manager / Process Task Manager communication
Component Manager Event Port	RMI	TCP	32773 (for backward compatibility with version 1 of Component Manager)	Content Platform Engine server	Component Manager version 1 on the Application Engine server
Rules Listener	RMI	TCP	32774 (for Rules Engine using Rules Connectivity Framework)	Content Platform Engine server	Rules Listener
Content Platform Engine server to server communication port	HTTP (only for clusters)	TCP	0 (randomly assigned port number)	Content Platform Engine server	Content Platform Engine server

Table 17. Content Platform Engine ports–continued

Port name	Reply or Response to requestor?	Long lived sessions?	Load Balancer?	Supports SSL?
SMTP (Email Notification)	No	No	No	No
Process Task Manager / Component Manager version 1 communications port	Yes	Yes	No	No
Component Manager Event Port	Yes	Yes	No	No
Rules Listener	Yes	Yes	No	No
Content Platform Engine server to server communication port	Yes	Yes	No	No

Table 18. Content Platform Engine ports - continued

Port name	Notes
SMTP (Email Notification)	The port is on the SMTP server and is configured for Content Platform Engine email notification in the Process Task Manager. Communication on this port is one-way, from the Content Platform Engine server to the email server.
Process Task Manager / Component Manager version 1 communications port	This port is on the Application Engine server for Process Task Manager to communicate with the Component Managers.

Table 18. Content Platform Engine ports - continued (continued)

Port name	Notes
Component Manager Event Port	The port is on the Application Engine server, configured through the Process Task Manager. This port number must match the port used for the Component Manager Event Port on the Application Engine. Communication on this port is one-way from the Content Platform Engine server to the Component Manager.
Rules Listener	The port is on the Content Platform Engine server. Communication on this port is bidirectional from the Content Platform Engine server to the Rules Listener
Content Platform Engine server to server communication port	For a cluster configuration only. If there is a firewall between the Content Platform Engine server instances of a cluster, this value should be set to a specific assigned port number and that port value should be allowed in the firewall configuration. The port is set for the workflow system. The port number is the internal port number, which is the field name for this in the Administration Console for Content Platform Engine. In a cluster configuration, this port needs to be set in Administration Console for Content Platform Engine and it needs to be opened in the firewall. Communication on this port is bidirectional between Content Platform Engine servers in a cluster.

Application Engine and Workplace XT ports

The Application Engine and Workplace XT servers ports table lists the port names, port numbers, communication protocols, and description for its use.

Table 19. Application Engine and Workplace XT server ports

Port name	Default port number	Notes
WebSphere	9080	The port is on the WebSphere Application Server for clients to connect to Workplace and Workplace XT.
WebSphere SSL	9443	The port is on the WebSphere Application Server for clients to connect to Workplace and Workplace XT through SSL.
WebLogic	7001	The port is on the WebLogic Server for clients to connect to Workplace and Workplace XT.
WebLogic SSL	7002	The port is on the WebLogic Server for clients to connect to Workplace and Workplace XT through SSL.
JBoss	8080	The port is on the JBoss Application Server for clients to connect to Workplace and Workplace XT.
JBoss SSL	8443	The port is on the JBoss Application Server for clients to connect to Workplace and Workplace XT through SSL.
BPM Web Services Reliable messaging client port	32767	The port is configured and used on the Application Engine server, for a Component Manager instance.

Table 19. Application Engine and Workplace XT server ports (continued)

Port name	Default port number	Notes
Content Platform Engine (RMI)	32771	The port is on the Windows Content Platform Engine server for Process Task Manager to communicate with the Windows Content Platform Engine Services Manager. Specify this port number in the `jpemgr.properties` file, in the **`jpemgr.port`** parameter on the Content Platform Engine. This port is on the Application Engine server for Process Task Manager to communicate with the Component Managers and the Windows Process Workplace (or Workplace XT) Services Manager. Set the port in Process Task Manager on the Application Engine as the Registry Port.
Component Manager (Event Port)	32773	The port is on the Application Engine server, and is used when the Component Manager (running on the Application Engine Server) is configured to be triggered by events, instead of polling. This port number must match the port used for the Component Manager Event Port on the Content Platform Engine.

"Process Simulator ports"
The Process Simulator ports information, which is segmented into multiple tables, lists the port names, port numbers, communication protocols, and description for its use.

"Content Search Services ports" on page 84
The Content Search Services ports information, which is segmented into multiple tables, lists the port names, port numbers, communication protocols, and description for its use.

"Rendition Engine and Content Platform Engine ports for Liquent" on page 84
The following tables list the Rendition Engine and Content Platform Engine ports information for Liquent.

"Database ports" on page 86
The database ports information, which is segmented into multiple tables, lists the port names, port numbers, communication protocols, and description for its use.

Process Simulator ports

The Process Simulator ports information, which is segmented into multiple tables, lists the port names, port numbers, communication protocols, and description for its use.

Table 20. Process Simulator ports

Port name	Application level protocol	Transport level protocol	Default port number	From	To
Registry port	RMI	TCP	32771	Process Task Manager	Process Simulator
Return	RMI	TCP	0	Application Engine	Process Simulator

Table 21. Process Simulator ports–continued

Port name	Reply or Response to requestor?	Long lived sessions?	Load Balancer?	Supports SSL?
Registry port	Yes	No	No	No
Return	Yes	No	No	No

Table 22. Process Simulator ports–continued

Port name	Notes
Registry port	The port is on the Process Simulator server. The Process Task Manager application on the Process Simulator server communicates with the Process Simulator server process on this port. The Application Engine also communicates with the Process Simulator server process on this port.
Return	The port is on the Process Simulator server and is used to communicate with the Application Engine server. By default an anonymous port number is used. However, if the Process Simulator server resides behind a firewall it will be necessary to specify an explicit port by entering a value other than 0.

Content Search Services ports

The Content Search Services ports information, which is segmented into multiple tables, lists the port names, port numbers, communication protocols, and description for its use.

Table 23. Content Search Services ports

Port name	Application level protocol	Transport level protocol	Default port number	From	To
Content Search Services server	proprietary	TCP	8191	Content Engine	Content Search Services

Table 24. Content Search Services ports–continued

Port name	Reply or Response to requestor?	Long lived sessions?	Load Balancer?	Supports SSL?
Content Search Services server	Yes	No	No	Yes (for P8 version 5.1)

Table 25. Content Search Services ports–continued

Port name	Notes
Content Search Services server	The port is located on the Content Search Services server and is used for communication between the Content Search Services server and the Content Engine.

Rendition Engine and Content Platform Engine ports for Liquent

The following tables list the Rendition Engine and Content Platform Engine ports information for Liquent.

Table 26. Rendition Engine and Content Platform Engine ports for Liquent

Port name	Transport level protocol	Default port number	From	To
Liquent input port	TCP/IP	2867 (COM Repository only)	Content Platform Engine and Rendition Engine	Rendition Engine
Liquent notify port	TCP/IP	2868	Rendition Engine	Content Platform Engine and Rendition Engine
Liquent event port	TCP/IP	2869	Content Platform Engine and Rendition Engine	Rendition Engine
Liquent admin port	TCP/IP	2870	Content Platform Engine and Rendition Engine	Rendition Engine
Liquent file transfer port	TCP/IP	2871	Content Platform Engine and Rendition Engine	Content Platform Engine and Rendition Engine
Liquent job queue port	TCP/IP	2872	Rendition Engine	Rendition Engine

Table 27. Rendition Engine and Content Platform Engine ports for Liquent - continued

Port name	Reply or Response to requestor?	Long lived sessions?	Load Balancer?	Supports SSL?
Liquent input port	Yes	No	No	No
Liquent notify port	Yes	No	No	No
Liquent event port	Yes	No	No	No
Liquent admin port	Yes	No	No	No
Liquent file transfer port	Yes	No	No	No
Liquent job queue port	Yes	No	No	No

Table 28. Rendition Engine and Content Platform Engine ports for Liquent–continued

Port name	Notes
Liquent input port	The port allows for distributed processing of jobs on the Rendition Engine servers when there are more than one Rendition Engine server. A Rendition Engine server or Rendition Engine client (Content Platform Engine Publishing server) on which a job is submitted makes the load balancing decision on where to run the job. If the job is sent to another Rendition Engine server for execution then it uses the other Rendition Engine server's input port to do so.
Liquent notify port	The port is also related to the distributed processing of jobs on the Rendition Engine servers. When a job is sent to another Rendition Engine server, then the originating Rendition Engine server or Rendition Engine client (Content Platform Engine Publishing server) is notified on this port by the other Rendition Engine server when the other Rendition Engine server has finished processing the job. One case of this is when the Rendition Engine server is notifying the Rendition Engine client (Content Platform Engine Publishing server) that a conversion job has completed.
Liquent event port	The port is used by each Rendition Engine server to send or receive events. These events are used by the Rendition Engine server to keep each other informed of current activities. The Liquent Domain Manager on the Rendition Engine server uses these events for the job status display.

Table 28. Rendition Engine and Content Platform Engine ports for Liquent–continued (continued)

Port name	Notes
Liquent admin port	The port is used by each Rendition Engine server for internal administrative functions. The primary use is for each Rendition Engine server to publish its current activity statistics (for example, how busy the business services are) for use by other Rendition Engine servers to make load balancing decisions.
Liquent file transfer port	This port is used for transferring source, temporary, and result files between Rendition Engine servers as well as between Rendition Engine servers and Rendition Engine clients (Content Platform Engine Publishing servers).
Liquent job queue port	This port is for job queuing by the render business service on all Rendition Engine servers.

Tip: If the Liquent port number assigned to the Rendition Engine/Liquent software conflicts with the port number required by another application or service that runs on the Rendition Engine server or the Content Platform Engine Publishing server, then the default values can be changed in the Liquent Domain Manager on the Rendition Engine server.

The above port numbers are the default values set by the Rendition Engine installer for the COM Repository in the Liquent Vista domain, which represents the Rendition Engine server itself. When a Content Platform Engine Publishing server is configured to point to the Rendition Engine server, one must create a "Java Repository" in the Liquent Vista domain that represents the Content Platform Engine Publishing server as a Java client to the Rendition Engine server, and this repository will also have the same default port number values.

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

Database ports

The database ports information, which is segmented into multiple tables, lists the port names, port numbers, communication protocols, and description for its use.

Table 29. Database ports

Port name	Application level protocol	Transport level protocol	Default port number	From	To
DB2 for Linux, UNIX, and Windows	JDBC or CLI	TCP	50000	Content Platform Engine, Case Analyzer and IBM Content Navigator	DB2
Oracle	JDBC or OCI	TCP	1521	Content Platform Engine, IBM Content Navigator, Case Analyzer, and Rendition Engine	Oracle

Table 29. Database ports (continued)

Port name	Application level protocol	Transport level protocol	Default port number	From	To
Microsoft SQL Server	JDBC or TDS	TCP	1433	Content Platform Engine, IBM Content Navigator, Case Analyzer, and Rendition Engine	Microsoft SQL Server

Table 30. Database ports - continued

Port name	Reply or Response to requestor?	Long lived sessions?	Load Balancer?
DB2 for Linux, UNIX, and Windows	Yes	No	Yes
Oracle	Yes	No	Yes
Microsoft SQL Server	Yes	No	Yes

Table 31. Database ports - continued

Port name	Notes
DB2 for Linux, UNIX, and Windows	DB2 for Linux, UNIX, and Windows default port. Port 50000 or higher can be used.
Oracle	Oracle DB default listener. Alternative port is 2483 (TTC) or 2484 (TTC SSL).
Microsoft SQL Server	The port is the default port for SQL Server.

"IBM System Dashboard for Enterprise Content Management ports"
The IBM System Dashboard for Enterprise Content Management ports information, which is segmented into multiple tables, lists the port names, port numbers , communication protocols, and description for it use.

"Content Services for FileNet Image Services ports" on page 89
The following tables list the port numbers used by IBM FileNet Content Services for FileNet Image Services.

IBM System Dashboard for Enterprise Content Management ports

The IBM System Dashboard for Enterprise Content Management ports information, which is segmented into multiple tables, lists the port names, port numbers , communication protocols, and description for it use.

Table 32. IBM System Dashboard for Enterprise Content Management ports

Port name	Application level protocol	Transport level protocol	Default port number	From	To
Listener (first)	TCP/IP	TCP	32775	IBM System Dashboard for Enterprise Content Management client (such as, System Dashboard / FSM)	IBM System Dashboard for Enterprise Content Management Listener (running on Content Platform Engine, Application Engine, FileNet Image Services, and other servers)
Listener (subsequent)	TCP/IP	TCP	OS defined	IBM System Dashboard for Enterprise Content Management client (such as, IBM System Dashboard for Enterprise Content Management / FSM)	IBM System Dashboard for Enterprise Content Management Listener (running on Content Platform Engine, Application Engine, FileNet Image Services, and other servers)

Table 33. IBM System Dashboard for Enterprise Content Management ports–continued

Port name	Reply or Response to requestor?	Long lived sessions?	Load Balancer?	Supports SSL?
Listener (first)	Yes	Yes	No	No
Listener (subsequent)	Yes	Yes	No	No

Table 34. IBM System Dashboard for Enterprise Content Management ports–continued

Port name	Notes
Listener (first)	This is the primary "pilot port" for connection to the IBM System Dashboard for Enterprise Content Management server. This port also registers the secondary allocated ports and communicates those numbers to the Dashboard. If needed, an administrator can use the `PchConfig.properties` file to override the OS-defined property and define a specific range of ports to use.
Listener (subsequent)	If the first listener port is allocated, the OS will allocate additional ports for managers to connect to listeners on the IBM System Dashboard for Enterprise Content Management server. If needed, an administrator can use the `PchConfig.properties` file to override the OS-defined property and define a specific range of ports to use.

Content Services for FileNet Image Services ports

The following tables list the port numbers used by IBM FileNet Content Services for FileNet Image Services.

Table 35. Content Services for FileNet Image Services ports

Port name	Application level protocol	Transport level protocol	Default port number	From	To
tms	Custom	TCP	32768	administrator	FileNet Image Services server
cor	Custom	TCP	32769	FileNet Image Services, FileNet Image Services Toolkit, or Content Engine server	FileNet Image Services server
nch	Custom	UDP	32770	Content Engine server	FileNet Image Services server
fn_snmpd	SNMP	UDP	161	SNMP Mgmt	FileNet Image Services
snmp trap	SNMP	UDP	162	SNMP Mgmt	SNMP Mgmt
fn_trapd	SNMP	UDP	35225	FileNet Image Services	SNMP Mgmt
Native default SNMP port (HP only)	SNMP	UDP	8000	SNMP Mgmt	HP-UX OS
IBM FileNet P8 specific SNMP port (HP and Solaris only)	SNMP	UDP	8001	SNMP Mgmt	fn_snmp (HP and Sun)
tpi	Custom	UDP	anonymous	FileNet Image Services Toolkit or FileNet Image Services	FileNet Image Services

Table 36. Content Services for FileNet Image Services ports–continued

Port name	Reply or Response to requestor?	Long lived sessions?	Load Balancer?	Supports SSL?
tms	Yes	No	No	No
cor	Yes	Caller is responsible for closing the connection	No	No
nch	Yes	No	No	No
fn_snmpd	Yes	No	No	No
snmp trap	No	No	No	No
fn_trapd	No	No	No	No
Native default SNMP port (HP only)	Yes	No	No	No
FileNet P8 specific SNMP port (HP and Solaris only)	Yes	No	No	No
tpi	Yes	No	No	No

Table 37. Content Services for FileNet Image Services ports–continued

Port name	Notes
tms	tms is the Task Manager service. TM_daemon listens for requests from initfnsw running on the same or a different system analogous to COR_Listen listening for RPCs.
cor	cor is the Courier service. COR_Listen listens on this port for incoming RPC requests.
nch	nch is the NCH daemon. NCH_daemon listens on this port. Pre-4.1.2 listened for broadcasts, and so on, Post 4.1.2, listens only for old print servers to verify that NCH is up.
fn_snmpd	fn_snmpd is the FileNet Image Services Simple Network Management Protocol daemon. It listens for SNMP requests from the native OS SNMP daemon. The native SNMP daemon listens on this port and communicates with fn_snmpd through other local port. fn_snmpd does not listen on this port.
snmp trap	This port is a well-known OS trap daemon port for listening to trap messages. All FileNet Image Services trap messages received by fn_trapd daemon are eventually routed to this port.
fn_trapd	fn_trapd is the FileNet Image Services trap daemon, which listens for notifications of the end of FileNet Image Services background processes running on the server and sys logs information.
Native default SNMP port (HP only)	All non-FileNet Image Services based SNMP requests are routed to this port for native SNMP processing.
FileNet P8 specific SNMP port (HP and Solaris only)	All FileNet Image Services based SNMP requests are routed to this port for fn_snmpd daemon processing.
tpi	Used for migration notification. The requester gets the anonymous UDP socket and waits on completion. When the migration is complete, the ds_notify and pri_notify processes send TPI notifications to signal completion of a task.

Important: On AIX, HPUX, HUPUXi, Linux, Linux on System z, and Solaris platforms, FileNet Image Services port assignments are made in the `/etc/services` file.

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