HP Project and Portfolio Management Center

Software Version: 9.14.0008

Document Management Guide and Reference

Document Release Date: August 2013
Software Release Date: August 2013

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- Software version number, which indicates the software version
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The following table indicates changes made to this document.

Publication Date	Summary of Changes
Auguest 2013 (9.14.0008)	• In Chapter 1, added the following sections about database-based DMS solutions: - *Database-based DMS Solutions Available with Version 9.14.0008* on page 12 - *Supported Migration Paths* on page 23 • Added the following chapters: - Chapter 8, *Configuring Database-Based DMS Solutions,* on page 157 - Chapter 9, *Upgrading and Migrating DMS Solutions,* on page 173 • Updated Chapter 10, *What Document Management Users Need to Know,* on page 197.

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1 Getting Started with HP Document Management

Introduction to HP Document Management

The optional document management module in HP Project and Portfolio Management Center (PPM Center) gives you more control over document search and storage than you get with the standard PPM Center application. The HP document management technology is a modified version of EMC Documentum. With it, you can track, index, and search multiple versions of supporting documents attached to PPM Center entities in HP Demand Management, HP Portfolio Management, HP Program Management, and HP Project Management.

Documents managed in these environments are always directly associated with a PPM Center entity through the standard attachment field and document references functionality in PPM Center. Entities include requests (portfolios, proposals, projects, and assets), project plans, and programs.

The HP document management module includes the following components, all of which are available only from HP for exclusive use with PPM Center:

- Integrated Content Server
- Documentum Foundation Classes (DFC)
- Fulltext indexing software, which includes index agent and index server

The HP document management module is supported on English-only Oracle databases.

For information about the system requirements for HP document management, see the *System Requirements and Compatibility Matrix.*

Database-based DMS Solutions Available with Version 9.14.0008

Starting from PPM Center version 9.14.0008, in addition to the PPM Center Database DMS solution, the PPM Center External Database DMS is also available. This means that you can fully leverage your current Oracle databases—either a PPM Center–dedicated database or an external database on your network. The database-based DMS solutions provide you the standard out-of-the-box document management capabilities.

The following DMS solutions are available:

- **PPM Center Database DMS:** Introduced into PPM Center since version 9.13. From PPM Center users' perspective, this solution provides all the features of a Documentum-based DMS solution, as well as a new feature to search only the latest versions of documents or to search all versions. This solution allows you to store all the documents and associated metadata in your HP PPM Center database, and provides documents check-in, check-out, and versioning functionalities out-of-the-box. It requires no additional software or hardware products, no additional deployment or configuration. It involves no extra license cost.
- **PPM Center External Database DMS:** Available since version 9.14.0008. Provides the same features as the PPM Center Database DMS solution, except that the documents are saved in an external database schema, instead of in the PPM Center database schema.
- **PPM Center File System:** The default DMS solution available. The File System DMS solution only offers "attachment-like" behavior, and offers none of the features expected from a Document Management System.

Table 1-1 summarizes functional differences among different DMS solutions.

Table 1-1. Functional comparison of DMS features

DMS Feature	File System	PPM Center Database DMS or PPM Center External Database DMS
Versioning	—	Yes
Check in/Check out	—	Yes
Check out override	—	Yes

Table 1-1. Functional comparison of DMS features

DMS Feature	File System	PPM Center Database DMS or PPM Center External Database DMS
Full Text Search	—	Yes (after enabling full-text search)
Key Words	—	Yes
Tip only / History Search	—	Yes (after enabling full-text search)

UI Changes

There is almost no difference for a PPM User when using Documentum or PPM Center Database DMS (or PPM Center External Database DMS). The only difference is that when full-text search is enabled in PPM Center Database DMS or PPM Center External Database DMS, the search pages display an option to “Search Historical Versions”.

Search Operators

The documents keywords search operators you can use are different between Documentum and PPM Center Database DMS (or PPM Center External Database DMS). The search syntax is described on the Search Help page. Click to open the Search Help page.

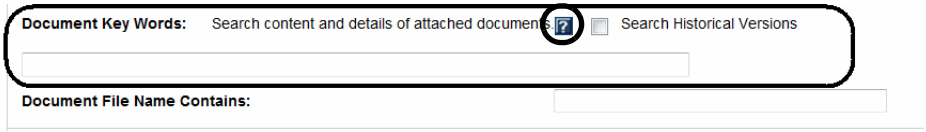


Table 1-2 summarizes the differences of search operators between Documentum-based DMS solutions and database-based DMS solutions.

Table 1-2. Differences of Search Operators (page 1 of 2)

Operators	PPM Center Database DMS, or PPM Center External Database DMS	Documentum
"AND" queries	You should insert the word `and` (case-insensitive) or `&` character between the search words.	By default, each query is an `AND` query. Since this is the default search behavior, there is no need to include the word `and` between search keywords.
Phrase search	By default, each query is a "Phrase" query.	You can also search for documents containing a specific phrase, or set of words in a specific order. Enclose the words in double quotes to enable this type of query. All words enclosed in double quotes must occur together and in the specified order for a document to be considered as a match.
Exclusion of words	To specifically exclude documents that contain a particular word, preface the keyword with a NOT (`~`) sign.	To specifically exclude documents that contain a particular word, preface the keyword by a minus (`-`) sign. In this case, all documents that contain the specified word are excluded from the results, even if they match other keywords in your query.
"OR" queries	You can insert the word `or` (case-insensitive) or `|` character between the search words.	If you want to search for documents containing one OR another keyword, you can insert the word `or` between the search words.

Table 1-2. Differences of Search Operators (page 2 of 2)

Operators	PPM Center Database DMS, or PPM Center External Database DMS	Documentum
Combination search	You may perform combination searches for documents by combining `AND`, `OR`, and `~` queries. If you want to search for documents containing both `AND` and `OR` queries, make sure to wrap sub-queries with parentheses "`(`" and "`)`".	Any of these search formats can be used in combination. `OR` queries take precedence over `AND` queries.
Search historical versions	The Search Historical Versions option allows you to search content and/or version comments of historical versions of documents in addition to full search (including document content and document properties) of their current version.	Not supported.
Synonyms	Not supported.	To expand your search to include keywords that have a similar meaning as a word you have specified, preface your keyword with a tilde (`~`). In this case, a document is considered as a match if it contains the search keyword you specified, or additional words that have a similar meaning.

Functional Capabilities of HP Document Management

HP document management provides a subset of the functionality that you get with the full enterprise edition of EMC Documentum. The key functional capabilities of the HP document management module are:

- Add documents to a PPM Center entity from the **References** section of a details page, from any document field on a request, from user data fields in both the PPM Workbench and the standard interface.
- Access documents from both EMC Documentum and from PPM Center
- Ability to check documents in and out, and to override check-outs
- Version control of attached documents and maintenance of version history
- Add key words and versioning information to documents at check-in
- Search for entities based on key words in documents attached as references to PPM Center entities or to user data fields
- Ability to conduct both standard and keyword content searches of the document repository from within PPM Center
- Ability to retrieve archived document versions
- Fulltext indexing supporting multiple languages

For information on how to use HP document management, see Chapter 10, *What Document Management Users Need to Know,* on page 197.

HP Document Management Use-Case Scenario

The following use-case scenario exemplifies how HP document management is used within large organizations.

A large national insurance company, XYZ Corporation, has just installed PPM Center and the HP document management module. A business analyst working with the IT organization at XYZ is preparing a proposal for new software to be used by insurance investigators across the corporation. Before submitting the proposal for review, the analyst must complete a business case document.

The PPM Center workflow associated with the proposal enforces this requirement. If the business case document is not attached to the proposal, the analyst cannot move to the next workflow step.

As the analyst checks out the business case document, and later checks in new drafts, document versions are created and stored. If necessary, users can access earlier versions of the business case document.

Documents managed using the HP document management module follow the same security rules (including field-level security rules) that apply to all PPM Center entities. This means that application users view only information that applies to their current roles and tasks.

The business analyst can use the document management module to search for entities based on the contents and metadata of documents attached to the entities. The analyst can use key words to locate relevant proposals, assets, requests, and other entities related to a business case, regardless of where the details about the entities reside.

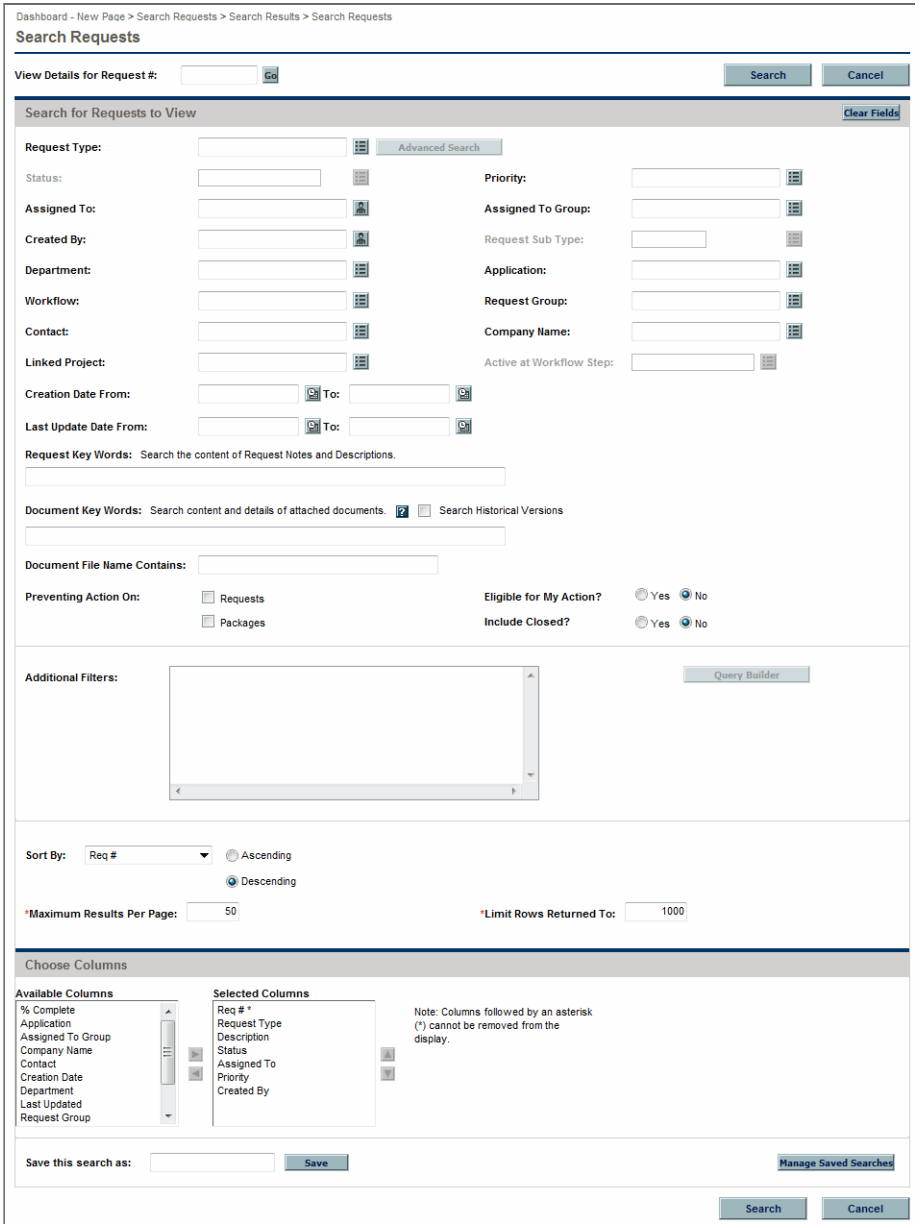
HP Document Management Enhancements to the PPM Center Standard Interface

The Search Requests pages in *Figure 1-1* and *Figure 1-2* illustrate the difference between standard attachment functionality and document management capabilities. *Figure 1-1* shows the Search Requests page in a PPM Center system without document management. You can type request key words to use to search the contents of request **Notes** and **Description** fields, but this search does not include the contents of documents attached to requests.

Figure 1-1. Search Requests page without HP document management

Figure 1-2 shows the Search Requests page in a system with document management. You can still use the **Request Key Words** field to search request notes and descriptions.

Figure 1-2. Search Requests page with HP document management



With fulltext indexing, you can include the contents of attached documents in a text search by typing the text in the **Document Key Words** field. The text you type in this field is used to search the contents of documents attached to requests that meet the other filter criteria. To search for documents with names that match known text, use the **Document File Name Contains** field.

The document management module affects the following pages and entities in the PPM Center standard (HTML) interface:

- Initiative Requests
- Packages
- Programs
- Project Issues
- Project Resource Request
- Project Risks
- Project Scope Changes
- Projects
- Requests
- Tasks

With HP document management, the Request Detail report includes additional information about attached documents.

Options for Implementing HP Document Management

With PPM Center version 9.10, you can implement HP document management in one of the following ways:

- **HP document management solution.** This solution provides enhanced content management functionality within PPM Center using an "embedded" version of EMC Documentum Content Server Enterprise Edition (EE) software available only from HP. The embedded Content Server EE software is free to customers who purchase a PPM Center application such as HP Demand Management or HP Project Management.

The embedded Content Server is license-restricted to contain only PPM Center documents.

- **Documentum Content Management integration.** If you already have a separate (stand-alone) deployment of EMC Documentum Content Server Enterprise Edition (EE version 6.5), you can integrate it with your PPM Center instance to provide more seamless content management across your enterprise. To enable this integration, you must purchase the HP PPM Center Documentum Connector software from HP.

Table 1-3 lists the possible scenarios for implementing HP document management in PPM Center version 9.10 and the high-level steps required to complete the transition from the current setup to the target setup.

Table 1-3. High-Level Steps for Implementing HP Document Management

Current Setup	Target Setup	How to Transition
PPM Center version 9.10 (no document management)	Integrate PPM Center with an existing stand-alone deployment of EMC Documentum Content Server EE version 6.5.	1. Purchase the HP PPM Center Documentum Connector software. 2. Run PPM Center server configuration utility (the `kConfig.sh` script). 3. Start PPM Center.
PPM Center version 9.10 (no document management)	Install the HP-provided embedded Content Server EE software and configure it to work with PPM Center.	1. Install the HP-provided embedded Content Server EE software. 2. Run `kConfig.sh` to configure PPM Center to work with the embedded Content Server software. 3. Start PPM Center.
PPM Center 7.5 with document management based on embedded Content Server EE 5.3 SP2	Upgrade HP document management to use the embedded Content Server EE version 6.5 software.	1. Upgrade to PPM Center version 9.10. 2. Upgrade the embedded Content Center from version 5.3 to version 6.5 3. Run the PPM Center server configuration utility (the `kConfig.sh` script) to upgrade the embedded Content Server 6.5 software. 4. Start PPM Center.
PPM Center 7.5 with document management based on embedded Content Server EE 5.3 SP2	Upgrade to PPM Center version 9.10, and then switch from using embedded Content Server software to using a stand-alone instance of Documentum Content Server.	1. Purchase the HP PPM Center Documentum Connector software. 2. Do the following simultaneously: • Obtain the migration tool from HP support, and then use the instructions provided with the tool to migrate data to the upgraded repository. • Upgrade to PPM Center version 9.10. 3. Run the PPM Center server configuration utility (the `kConfig.sh` script). 4. Start PPM Center. As soon as file migration is complete, you can access and act on attached documents.

Supported Migration Paths

For details about supported DMS migration paths, typical upgrade and migration scenarios and the high-level steps required to complete the migration, see Chapter 9, *Upgrading and Migrating DMS Solutions,* on page 173.

How Document Management Affects Performance

This section addresses how HP document management affects PPM Center performance.

Implementing document management as part of PPM Center affects the following functional areas:

- Attaching a document to a PPM Center entity (such as a request or package), either through user data fields, any document field on a request, the PPM Workbench, or through the **References** section available for some entities in the standard interface
- Viewing a document that is attached to a PPM Center entity

Without document management enabled, documents attached to HP entities are uploaded and stored on the PPM Server file system. With document management, attached documents are uploaded to the PPM Server, and then stored in a Documentum Content Server repository.

In the typical configuration, the PPM Server and Content Server are located on the same local network. This ensures that any communication between the two servers enjoys fast, uninterrupted network access.

The overhead of storing and retrieving attached documents to and from the Content Server repository adds minimal overhead to client response time. With or without the document management module, the key factor that determines response time is the quality of the wide-area network (WAN) between the client machine and the PPM Server.

Performance and Attaching Documents

With document management enabled, attaching a document to a PPM Center entity results in the following:

1. The document is uploaded to the PPM Server for temporary storage.

   The time required to upload a document with HP document management in place is the same as the time required if document management is not in place. This is the key performance consideration for client users. The network quality between the client and the PPM Server directly affects the time it takes to upload documents, independent of whether document management is enabled.

2. The user saves the entity (for example, a request) to which the document is attached, the document is copied to Content Server, and the temporary copy is removed from the PPM Server.

   When the entity is saved, the save time is increased by 50 to 100 percent over the save time for the same entity without an attached document. The time it takes to save an entity increases for each additional document attached, or for each new version of an existing document uploaded.

Overview of Document Management Deployment

A Content Server environment consists of a specific combination of operating system, database, and an index server host machine for the fulltext index server.

To deploy the document management module for the first time, perform the following tasks either before or after you install or upgrade PPM Center:

- Install Content Server and configure it to work with PPM Center.

  Content Server installation and setup for use with PPM Center can take more than half a day. The time required for setup depends on server performance, the quality of the network connecting servers, and, if you are upgrading from earlier document management functionality, the number of attachments you plan to migrate.

  For information about how to install and configure Content Server, see Chapter 3, *Installing and Configuring Content Server,* on page 83.

- Install fulltext indexing, and configure the index agent.

  For information on fulltext indexing and how to install it, see Chapter 4, *Installing Content Server Fulltext Indexing Software,* on page 99.

- Install DFC on any PPM Server machine that is not a Content Server host.

  For detailed instructions on how to install DFC as a separate installation independent of Content Server installation, see Chapter 5, *Installing Documentum Foundation Classes,* on page 119.

For information about how to use the HP document management module, see Chapter 10, *What Document Management Users Need to Know,* on page 197.

Although the PPM Server uses only a subset of the features that the standard Content Server application provides, Content Server installation includes more than what is required for HP document management. For example, the installation procedure installs Apache Tomcat and an older version of the SDK that PPM Server does not support. Although this does not affect the PPM Server, you may notice some information displayed during installation that does not apply to PPM Center document management.

Installation Sequence

If you are installing the document management components for the first time, you can perform the installation either before or after you install or upgrade PPM Center.

Install Content Server products in the following order:

1. On the Content Server host machine, install Content Server and configure a repository.

   For information about how prepare to install and configure Content Server, see Chapter 2, *Preparing to Install EMC Documentum Content Server,* on page 31. For instructions on how to install and configure Content Server, see Chapter 3, *Installing and Configuring Content Server,* on page 83

   DFC is automatically installed with Content Server.

2. On PPM Servers on which Content Server is not installed, install the DFC.

   For detailed instructions on how to install DFC as a separate installation independent of Content Server installation, see Chapter 5, *Installing Documentum Foundation Classes,* on page 119.

3. Install the index server and index agent.

   For information about fulltext indexing and the steps you perform to install it on Windows or UNIX systems, see Chapter 4, *Installing Content Server Fulltext Indexing Software,* on page 99.

   For instructions on how to enable the HP Document Management Module after you install the required components, see Chapter 7, *Enabling HP Document Management,* on page 143.

   For information about how to use the HP document management module, see Chapter 10, *What Document Management Users Need to Know,* on page 197.

Related Documents

This section describes the HP PPM Center and EMC Documentum guides and reference documents required to install and configure the HP document management module.

HP Documents

In addition to this guide, the following PPM Center documents are required for HP document management module installation:

- *Installation and Administration Guide*

  This guide includes initial product installation procedures as well as configuration, operation, maintenance, migration, and performance information. In particular, this guide provides an overview of the PPM Center architecture and optional configurations. This information can help you determine the optimal configuration of your deployment.

- *System Requirements and Compatibility Matrix*

  This document provides the details that enable you to understand the hardware and software options available for your PPM Center deployment.

  It includes information about the environments and products supported by HP for this version of PPM Center. Additionally, this guide identifies required third-party software as well as software that you can use to enable optional features and functionality.

- *Upgrade Guide*

  If you plan to upgrade from an earlier version of PPM Center, see this guide for information on supported upgrade paths, what to do to prepare to upgrade, and how to perform and then verify the upgrade.

- *Release Notes*

  This document provides late-breaking information that is not included in the core product documentation and may affect your PPM Center installation.

EMC Documentum Guides

To supplement the information provided in this document, you will need the following EMC Documentum guides, which contain full details on the requirements for installing and administering the EMC Documentum components of HP document management:

- *Content Server Release Notes*
- *EMC Documentum Content Server Installation Guide*

  This guide contains information and instructions you need to install or upgrade EMC Documentum Content Server.

- *EMC Documentum Content Server Administration Guide*

  This guide contains information and procedures required for the normal system administration of a Documentum Content Server installation. It includes information about connection brokers, managing content storage area, and repository security.

- *EMC Documentum Fulltext Indexing System Installation and Administration Guide*

  This guide contains information and instructions you need to install, upgrade, and maintain the fulltext indexing system used with EMC Documentum Content Server. It addresses decisions you need to make and requirements that your system must meet before you install the fulltext indexing software.

- *EMC Documentum Foundation Classes Installation Guide*

  This guide contains information and instructions on how to install the DFC.

- *EMC Documentum Content Server DQL Reference Manual*

  This document the reference manual for Documentum's Document Query Language, which is supported by Content Server.

HP provides the relevant EMC Documentum guides in PDF format on the HP PPM Center software CD.

Accessing PPM Center Documentation

To obtain all of the HP PPM Center documentation, go to the HP Software Product Manuals Web site (h20230.www2.hp.com/selfsolve/manuals). To access this Web site, you must first set up an HP Passport account.

2 Preparing to Install EMC Documentum Content Server

About this Chapter

This chapter contains instructions on how to prepare to install the embedded Content Server EE 6.5 software that HP provides with PPM Center. Information about how to prepare to integrate with a stand-alone instance of Content Server EE 6.5 is provided at the end of the chapter.

Overview

Deploying the HP document management solution for the first time involves installing the Content Server components that HP provides, and then configuring the server with PPM Center.

If you plan to integrate PPM Center with an existing Content Server Enterprise Edition installation, see *Preparing to Integrate PPM Center with a Stand-Alone Instance of EMC Documentum Enterprise Edition* on page 81.

A Content Server environment consists of:

- A specific combination of operating system and database.
- Optimally, an index server host machine for the fulltext index server.

Installing and configuring Content Server for use with PPM Center can take several hours. The time required for setup depends on server performance, the quality of the network connecting servers, and, if you are upgrading from earlier document management functionality, the number of attachments you plan to migrate.

Although the PPM Center uses only a subset of the features that the standard Content Server application provides, Content Server installation includes more than what is required for HP document management. For example, the installation procedure installs Apache Tomcat and a version of the JDK that PPM Server does not support. Although this does not affect the PPM Server, you may notice some information displayed during installation that does not apply to HP document management.

You can set up document management in PPM Center *after* you have deployed and used PPM Center. PPM Center runs normally without the document management functionality, so you can perform the integration later, if you prefer.

The following sections in this chapter contain the information you need to prepare to install the Content Server components:

Content Server Components

To understand Content Server functionality, it is useful to know something about its components and structure. This section provides information on the connection broker application, the document repositories, and DFC, and how these components interact with one another and with PPM Center.

File Stores

File stores contain the content files for objects stored in the repository.

Content Server

Content Server software manages the content repository. It consists of several distinct process and components, including an application server reserved for internal use. For information about the internal structure of Content Server, see the *EMC Documentum Content Server Administration Guide.*

Connection Broker

The connection broker is part of Content Server, and is created during Content Server installation. It runs in the background and provides connection information to client applications. PPM Server is a client application to the connection broker.

The connection broker listens for incoming requests on a port you specify. During Content Server installation, you provide the machine hostname and port number. The PPM Server requires this information to communicate with Content Server.

The default port number is 1489. You can specify any unused port on the machine, but HP recommends that you keep the default setting.

Repository

Managed documents are stored on Content Server in a repository. This virtual storehouse consists of content and index files and object metadata. Metadata includes properties that describe file characteristics such as creation date, author, and version number.

The repository has a file system component and a database component. For this reason, you must ensure that the Content Server host has access to an Oracle database.

File content and indexes are stored on the file system, while the object metadata are stored in an Oracle database. PPM Center stores documents in the repository that you specify during Content Server installation.

A single connection broker can route requests to multiple repositories. You can create a separate repository for each PPM Server instance, and then point each PPM Server instance to its own repository. This separates the storage areas (physical disk and database schema) and gives you more control over your hardware. You can create multiple repositories on the same Content Server.

Documentum Foundation Classes

PPM Center communicates with Content Server through an application programming interface (API) library called *Documentum Foundation Classes,* or the *DFC.* To function correctly, the PPM Server must be able to locate the DFC.

When you run the PPM Center configuration utility (`kConfig.sh` script) to configure document management for PPM Center, a properties file named `dfc.properties` is added to the `<PPM_Home>/server/<Server_Name>/conf` directory. This file includes DFC installation directory information.

The DFC uses `*.dll` native library files on Windows, and UNIX native library files such as `*.so`. To communicate with Content Server, the PPM Server startup `(kStart.sh)` and configuration `(kConfig.sh)` scripts must have access to these library files.

The DFC is automatically installed with Content Server. If you install Content Server software on the same machine as the PPM Server, there is no need install the DFC separately. However, if Content Server and the PPM Server are on separate machines, you must install the DFC separately on the PPM Server. For information about how to install the DFC, see Chapter 5, *Installing Documentum Foundation Classes,* on page 119.

If you need to install DFC 6.5 on PPM Server machines that are *not* Content Server hosts, HP recommends that you do so *before* you install or upgrade to PPM Center version 9.10.

You can install Content Server in different configurations. In the most basic configuration, which is typically used in development environments, Content Server, the database, and content files all reside on the same host. In production environments, the Content Server, database, and content files are almost always installed on different hosts for increased performance.

High-Level Content Server Deployment Sequence

The high-level steps used to install and configure the HP document management module are as follows:

1. Check the HP document *System Requirements and Compatibility Matrix* to make sure that your system meets the minimum requirements for document management installation and setup.
2. Install or upgrade to PPM Center version 9.10, as described in the *Installation and Administration Guide* or the *Upgrade Guide,* respectively.

After you upgrade to PPM Center version 9.10, do not restart the PPM Server yet.

If you have been using HP document management with PPM Center version 7.5, then after you upgrade to PPM Center version 8.00, and then to 9.10, your users will have read-only access to the documents in you repository. Full access is restored after you install Content Server and integrate it with PPM Center.

3. Install the Oracle client software on the machine that is to host Content Server. For information, see *Installing and Configuring Oracle Client Software* on page 49.
4. Read all information related to Content Server installation.

   For information on what to read before you install and configure Content Server, see *Related Documents* on page 27.
5. Install and configure the document management module, including Content Server and full-text indexing software.
   a. On the Content Server host machine, install Content Server and configure a repository. Dependent products such as the DFC are automatically installed with Content Server.
   b. On PPM Servers on which Content Server is not installed, install the DFC.

c. Install the index server and index agent.

You can install the module on the machine running the PPM Server, or on a different machine. For information about how to set up Content Server, see *Installing Content Server* on page 55 and the EMC Documentum *Content Server Installation Guide* and *Content Server Administrator's Guide,* described in *Related Documents* on page 27.

For information about how to install the full-text indexing software, see *Installing Content Server Fulltext Indexing Software* on page 99.

6. If you installed Content Server and the PPM Server on separate machines, install the DFC on the PPM Server.

   For information about how to install the DFC, see Chapter 5, *Installing Documentum Foundation Classes,* on page 119.

7. Although PPM Center does not use the email notification feature in Documentum, you must specify a value in the **SMTP** field during Content Server installation.

You can specify an invalid SMTP server, but you must complete the field.

8. Configure the document management components to work with PPM Center. Perform this configuration separately for every server in a PPM Server cluster.

   This step is described in *Configuring Document Management in PPM Center* on page 145. Briefly, browse to the `dfc.properties` file to the `<PPM_Home>/server/<Server_Name>/conf` directory on the PPM Server, and then run the `<PPM_Home>/bin/kConfig.sh` script. This establishes the communication between the PPM Server and Content Server.

9. Test the connection between PPM Server and Content Server.

10. Test the document management functionality in PPM Center.

    For example, add a document attachment to a request, modify the document, and then check to make sure that two versions of the document exist in the system. Also, check to make sure that key words added to the document produce the search results you expect.

    For more information about using document management in PPM Center, see Chapter 10, *What Document Management Users Need to Know,* on page 197.

Content Server Configuration Concepts

Content Server configuration occurs in the `server.ini` file and on the repository in the server configuration object named `dm_server_config`.

server.ini File

The `server.ini` file, contains information that Content Server uses at startup including:

- Repository name
- Connectivity
- Password
- Owner
- Connection broker connectivity
- Other parameters, such as the number of maximum concurrent sessions

The `server.ini` file is similar to the `server.conf` file in PPM Center. Depending on your operating system, you can find the file in the following location.

Operating System	File Location
Windows	%DOCUMENTUM%\dba\config\<*Repository*>
UNIX	$DOCUMENTUM/dba/config/<*Repository*>

After you update the server.ini file, restart Content Server to apply your changes.

For detailed information about the server.ini file, see the *EMC Documentum Content Server Administration Guide.*

dm_server_config Object

The repository server configuration object named dm_server_config is used to configure Content Server. Each repository is associated with a corresponding server config object.

You can use to IDQL to verify that a repository is correctly associated with a server config object. IDQL is the command-line tool that lets you enter ad hoc DQL (Documentum Query Language) queries against a Content Server repository. IDQL is also a useful as a tool for testing and other tasks that support an application or installation because it allows you to run scripts and batch files.

IDQL is included and installed with Content Server. It is found in $DM_HOME/bin on Linux and in %DM_HOME%\bin on Windows.

For more information about the IDQL utility and how to start and use it, see the *EMC Documentum Content Server Administration Guide.* For information about DQL, see the *EMC Documentum Content Server DQL Reference Manual.*

To run a DQL query against a repository, you must first start an IDQL session, as follows:

1. At the command prompt, navigate to the $DM_HOME/bin directory.
2. Run the IDQL utility executable, idql32.exe.
3. At the prompt, type the repository name.

4. Press `Enter`.
5. At the prompt, type the account name for a user with at least System Administrator privileges in the repository.
6. Press `Enter`.
7. At the prompt, type the password for the user account.
8. Press `Enter`.

   An interactive document query interface session starts. You can type your query at the prompt. The following example DQL query returns one row for each repository on Content Server.

Example query:

```
1> select "object_name"
2> from "dm_server_config"
3> go
```

After you run this statement, you can interact with a particular repository server configuration by updating that repository server config object. For example, to see the configuration parameters for a repository named "PPMdocs," you would run the following DQL statement:

```
1> select * from "dm_server_config"
2> where "object_name" = 'PPMdocs'
3> go
```

To close an IDQL session, type the `quit` command at the IDQL prompt.

You can update configuration information in the repository server configuration object while Content Server is running, without having to restart it.

Content Server Installation Requirements and Setup

Before you install Content Server, make sure that you have completed the following steps:

1. Check the HP document *System Requirements and Compatibility Matrix* to make sure that your system meets the minimum requirements for document management installation and setup.
2. Install or upgrade to PPM Center version 9.10, as described in the *Installation and Administration Guide* or the *Upgrade Guide,* respectively.

If you have been using HP document management with PPM Center version 7.5, then after you upgrade to PPM Center version 9.10, users have read-only access to the documents in your repository. Full access is restored after you install and integrate with Content Server 6.5.

3. Read all information related to Content Server installation.

   For information on what to read before you install and configure Content Server, see *Related Documents* on page 27.
4. Continue with and complete the required preparation steps for your configuration, as detailed in the following sections.

Required Windows User Accounts

Select or create a Windows user to function as the installation owner. You must use this account when you install Content Server. Content Server runs under the account of the installation owner. Use it to perform all Content Server administration.

The Windows user account for the installation owner must meet the following requirements:

- The account can be a local or domain account, but if it is a domain account, then it must be a member of the local administrator group.
- The account must have Full Control permission in the `%DM_HOME%` directory.
- The account must not be the same account as the Windows administrator.
- The account must have the following rights, which are granted during installation:
  - Act as part of the operating system
  - Create a token object
  - Increase quotas
  - Log on as a service
  - Log on locally
  - Replace a process-level token
- The account user name can only contain alphanumeric, hyphen (-), and underscore (_) characters.

  The user name log on with to install Content Server must match this Windows user name, including case, even though Windows user accounts are not case-sensitive.
- The account password can only contain alphanumeric, hyphen (-), and underscore (_) characters.

Required UNIX Accounts

On Linux systems, every Content Server installation must have group and user accounts for the installation owner, repository owner, and repository users. Some of these accounts must be in place before you begin to install. Others can be set up during or after installation.

Every Content Server installation and each repository must have an owner. Each repository has users. The individual responsibilities of the installation owner, repository owner, and repository users are described in the following sections.

Installation Owner Group

To support external password validation, set up a group account whose members are the installation owner, any other Content Server administrators, and repository owners. This group will own the external password validation program.

Installation Owner User Account

Create a UNIX user account (referred to in this document as dctm) that you can use to install, execute, and administer Content Server.

The user account password cannot contain special characters such as $ or @.

The installation owner is the user whose account is used to install Content Server and create a repository. The server runs under the installation owner account.

The installation owner must have an operating system account. The installation owner user name must consist of ASCII alphanumeric characters, dashes (-) and underscores (_). The first character must be a letter. The installation owner password must consist of letters, numbers, dashes, underscores, and periods.

The installation owner account must have read, write, and execute permission on the `/var/tmp` directory and on the installation directory (`$DM_Install` and its subdirectories).

Do not use the root account as the installation owner account.

As installation owner, you can perform all administrative or maintenance tasks associated with repository installation. After you create a repository, you can create additional repository accounts with Superuser or System Administrator privileges. You can also use those accounts for repository administration.

After you install Content Server, you must enable the automatic deletion of old audit trail objects from the repository. For more information, see the *EMC Documentum Content Server Installation Guide.*

You can create an operating system account to use exclusively for server installation and repository maintenance. You can use a single user account as installation owner for multiple Content Server installations on your network.

On Linux systems, you can create multiple Content Server installations on a single host computer. You can have separate installation owners for each installation or you can use separate environment files to enable a single installation owner to own all of the installations.

Repository Owner Account

The repository owner is the user whose account is used to connect to the database. The repository owner owns all objects in the database. Each repository must have a unique repository owner.

The repository owner user name and password must consist of letters, numbers, dashes (-) and underscores (_). The first character in the name must be a letter, and all characters must be ASCII characters. The corresponding password must consist of a combination of letters, numbers, dashes, underscores, and periods.

During server installation, you can specify an existing database account for database access. If you designate an existing account to use for database access, that user becomes the repository owner. Alternatively, the installer can create a database user during installation. The new user then becomes the

repository owner. If the installer creates the database user, the database user name defaults to the repository name.

Assign the following privileges to the database user account of the repository owner:

- Connect to the database
- Create tables, views, and indexes in the database
- Insert records (rows) into tables
- Drop tables, views, and indexes
- Unlimited tablespace

If you allow Content Server installer to create a database account for the repository owner, the required privileges are automatically granted to the repository owner. If you create the account before you run the installer, assign the `CONNECT` and `RESOURCE` privileges to the account.

Setting Up the UNIX Services File

The `services` file contains information on the port numbers used by the services or processes that run on a host. The `services` file must contain an entry for each repository running on a host.

On UNIX, you must manually create the service name entry in the `services` file before you install the server. For each repository running on the host, the service name entries are made in one of the following:

- `/etc/services` file
- NIS services map

You must have root privileges to edit the `/etc/services` file.

The repository does not have a default service name or default port number. The service name you place in the `services` file must be the same name you provide during repository configuration, which is then used to create the `server.ini` file. The service name for the repository can be the same as the repository name, but this is not a requirement.

As root, create the service name entries using the following format:

```
<Service_Name> <Port_Number>/tcp # Comment here, if needed
```

or

```
<Repository> <Repository_Port>/tcp # RepositoryForPPM
```

The <Repository> and <Repository_Port> variables are user-specific. The port must be an unused port on the machine running Content Server, and the repository name must be an alphanumeric string unique to the repository. The repository name can contain hyphens (-) and underscores (_), but no other special characters.

If Network Information Service (NIS) is running, the local services file (/etc/services) is ignored. Place the entries in the NIS services map. Use the ypwhich command to identify the host name of the NIS master server, if one exists.

You can specify any unused port number greater than 1024. (Linux reserves port numbers up to 1024 for system use.) For example, if the repository service were named mugwort, the services file entry might be:

```
mugwort 1497/tcp # repository
```

If you have multiple repositories on a single machine, create a services file entry for each repository, and make sure that each has a different name and port number.

Content Server Installation Directories for UNIX

You can either create the installation directories before you install Content server, or you can let the Content Server installer create the directories for you based on your input.

If you allow the Content Server installer to create the directories, make sure that the directories you specify during installation match those specified for the environment variables.

Determine the directories where you plan to install Content Server, and then set the $DM_INSTALL and $DM_HOME environment variables in the installation owner environment.

The $DM_INSTALL environment variable corresponds to the directory where you plan to install Content Server. The installation owner must have read, write, and execute permission on the $DM_INSTALL directory and its subdirectories. The $DM_HOME environment variable corresponds to the $DM_INSTALL/product/<Version> directory.

The environment variables and installation directories must contain only ASCII characters. The directory in which you install Content Server cannot contain spaces or any of the following characters:

```
! \ / : * ? " < > |
```

Default Operating System Permissions on UNIX Directories and Files

As Content Server creates directories and files in the server installation, it assigns default operating system permissions to them. The default permissions assigned to directories are 777 and the default permissions assigned to files are 666. To change the defaults assigned to public directories and files, set the umask key in the server.ini file. Setting umask affects all public directories and files created after you set the key.

The umask key works similarly to the UNIX umask functionality. The value is subtracted from the default permissions to determine the actual permissions assigned to a file or directory. For example, if you set umask=2, then the default permissions assigned to directories becomes 775 and the default permissions for files becomes 662. Or, if you set umask=20, then the permissions become 757 for directories and 626 for files.

UNIX Graphical Installer Set Up

If you plan to use the graphical installer:

- Install the X Window System on the UNIX host.
- Add the xterm program directory to the PATH variable of the Documentum installation owner. You can install the xterm program in any of several locations, depending on your operating system and software packages installed. Typical locations include /usr/openwin/bin on Solaris and /usr/bin/X11 on HP-UX and AIX.

Preparing the Database for Content Server Installation

Every repository must have a correctly configured Oracle database. The requirements are as follows:

The Oracle database described in this section is not the same as the PPM Center database. The Content Server repository and Index Server require a separate Oracle database.

- If you install the database on the Content Server host with a Linux system, verify that the system path includes the directory for the database.
- If you install the database on the Content Server host with a Windows operating system, make sure that the database service is set to start automatically. Server installation sometimes requires a restart of the computer. After the restart, installation does not proceed correctly unless the database starts automatically.
- If you create a remote Content Server for a distributed content environment, the `server.ini` file from the primary Content Server host is copied from the primary host to the remote host. To ensure that the `database_conn` key on the primary Content Server host is valid on the remote hosts, make sure that the values used on the primary and remote hosts for database connectivity are identical.
- You must install the database client on remote Content Server hosts. The remote Content Server configuration program must connect to the database to create the server config object, acs config object, file store storage object, and location objects for the remote server.
- Content Server uses the repository owner account to connect to the database. The sections on the repository owner in the *EMC Documentum Content Server Installation Guide* provide more information. The server runs as the installation owner, but a separate account must exist to give the server access to the database tables underlying the repository. Each repository must have a unique repository owner and each repository owner must have a unique database account.

You can create the repository owner account and the database or tablespace that the repository uses before you install Content Server, or the server installation software can create the account and database or tablespace. Before you begin installation, decide whether to create the account yourself or allow the installation program to create the account. The account must have the CONNECT and RESOURCE privileges to do the following:

- Connect to the database
- Create tables, views, and indexes in the database
- Insert records (rows) into the tables
- Drop tables, views, and indexes

- Give the repository owner account the Select Catalog Role privilege.
- If you choose to have Content Server installation software create the repository owner account in the database for you, you must have the database administrator user name and password.
- If you install your Oracle database on a machine other than the Content Server host, verify the following:
  - The remote machine has an operating system that the Oracle version supports.
  - You can connect to the database client from the system on which you plan to install Content Server.
- Create the repository database with the UTF-8 code page, which can accurately store characters from all supported languages. For instructions, see the documentation for your Oracle software version.

  On Oracle 9i, when you create the database and choose the database character set (code page), select Unicode (AL32UTF8). If you plan to migrate an existing database to UTF-8, use AL32UTF8.

  On Oracle 9i, when you create the database and choose the database character set (code page), select Unicode (AL32UTF8).

- Typically, Content Server is installed on the English version a database. However, Content Server installation is also supported on localized databases if the database fulfills the following criteria:
  - Database supports internationalization of locales (I18N)
  - Database and adheres to I18N standards
  - Content Server is installed with UTF-8 and case-sensitive (SQL)

Installing and Configuring Oracle Client Software

To install and configure your Oracle database for HP document management:

1. Install and configure the Oracle client software on the machine on which you plan to install Content Server.
2. Ensure that the Oracle database aliases (TNS aliases) are in the `tnsnames.ora` file on the Content Server host.

   The `database_conn` key in the `server.ini` file must match the database entry in the `tnsnames.ora` file.

   For more information, see the *EMC Documentum Content Server Installation Guide* and your Oracle software documentation.
3. Use the `tnsping` command and SQL*Plus to verify that the Oracle client software is correctly installed.

   For information about using the `tnsping` command, see the Oracle Utilities web site (oracleutilities.com/OSUtil/ping.html). For information about SQL*Plus, see your Oracle documentation.
4. Ensure that SQL*Plus is installed on the Content Server host.

   SQL*Plus is required to create tablespaces and the database user (repository owner) account.
5. Ensure that `sqlnet.ora` and `tnsnames`.ora are configured correctly. The database aliases must be in the `tnsnames.ora` file, and the `tnsnames.ora` file must be configured on the Content Server host. To specify connections, use fully-qualified names in `tnsnames.ora`.

For example:

```
PPMDEV_TEPPMDS1.USA.NET =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = hennington)(PORT =
1521))
    )
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = PPMDEV)
    )
  )
```

6. Verify that you can connect to the Oracle database by using SQL*Plus from the system on which you plan to install Content Server.
7. Start the Oracle Listener process and configure it to start automatically on the machine where the Oracle database resides.
8. Ensure that the Oracle RDBMS meets the following requirements:
   - On UNIX and Linux, ensure that the `ORACLE_HOME` and `TNS_ADMIN` environment variables are set in the installation owner's environment.

     The Content Server installation program looks first for `TNS_ADMIN`, and then for `ORACLE_HOME`, to locate the `tnsnames.ora` file.
   - If you are installing Content Server with Oracle Real Application Clusters, set the value of the Oracle parameter `MAX_COMMIT_PROPAGATION_DELAY` to zero. This ensures that the data that Content Server uses is consistent across all Oracle nodes. Values other than zero are not supported.
   - In the `init.ora` file or `spfile`, use the following settings:

     ```
     optimizer_index_cost_adj=5
     optimizer_index_caching=95
     ```
9. After you verify that the Oracle client software is correctly installed, restart the machine.

Preparing to Install Content Server (All Operating Systems)

Before you install Content Server, you must perform some configuration steps and set up the required user accounts on the system.

The configuration tasks are as follows:

1. Ensure that the machine where you plan to install Content Server has access to a valid SMTP server for email notifications.

   Although PPM Center does not use this notification mechanism, you cannot install Content Server without it. If a valid SMTP server host name is not available during installation, supply an invalid host name so that the installation can finish. Do not leave the field blank.

2. Stop all nonessential services and stop all nonessential programs.

3. Add the following environment variable:

   For Windows:

   Edit the PATH variable to include:

   `<DFC_Install_Location>\<Java_Version>`

   where `<Java_Version>` is the Java Runtime Environment (JRE) version supported for the Content Server version you plan to install. The DFC installation location (typically `C:\Program Files\Documentum`) is set during server installation.

   For UNIX:

   To configure the runtime environment of the dctm user, in one of the `*.rc` files, set the following environment variables:

   ```
   setenv DOCUMENTUM <Install_Directory>
   ```

   Before you begin to install Content Server, check to make sure that this install directory exists. Set these variables in the installation owner's `.cshrc` file (C shell) or `.profile` file (Bourne or Korn shells). Alternatively, set the variables in a file called by the `.cshrc` file or `.profile` file.

   ```
   setenv DM_HOME $DOCUMENTUM/product/<Version>
   setenv DOCUMENTUM_SHARED $DOCUMENTUM/shared
   setenv LD_LIBRARY_PATH $DM_HOME/bin:$JAVA_HOME/lib
   ```

LD_LIBRARY_PATH is a Solaris-specific shared library environment variable. This variable name and value vary, depending on the UNIX operating system and version.

- For Linux systems, set LD_LIBRARY_PATH
- For HP-UX systems, set SHLIB_PATH
- For AIX systems, set LIBPATH

For descriptions of all required environment variables, see the *EMC Documentum Content Server Installation Guide*.

4. Obtain the Content Server bundle for your operating system and copy it to a temporary directory from which to run the installation.

This temporary directory is referred to in this manual as `$DM_INSTALL`.

5. Extract the installation bundle and the installation files.

   For example:

   ```
   ContentServer_<Operating_System>.bin
   consistency_checker.ebs
   dfcSetup.jar
   jdkSetup.jar
   server.jar
   suite.jar
   tomcat 4127Setup.jar
   setupError.log
   ```

6. Select the installation location.

   In this document, `C:\Documentum\` refers to the installation directory on Windows systems, and `%DM_HOME%` refers to the installation directory on UNIX and Linux systems.

   The directory path name cannot contain spaces or special characters.

7. Check the regional and language options settings on Windows to make sure that the selected date format displays a four-digit year.

8. If you install a distributed configuration, ensure that all host computers in the configuration are set to the same Universal Time Coordinated (UTC) time.

9. Choose an Oracle database in which to install the repository. Verify that you can connect to this database using SQL*Plus from the system on which you plan to install Content Server.

   Content Server installer automatically creates the repository schema in this database.

Additional Preparation for Installing Content Server on a UNIX System

Before you install Content Server on a UNIX system, make sure that you have completed the following:

1. *Content Server Installation Directories for Linux* on page 77
2. *UNIX Graphical Installer Set Up* on page 46
3. *Setting Up the UNIX Services File* on page 44
4. *Required UNIX Accounts* on page 42

   Set up a group account, an installation owner account, and a repository owner account.

   a. *Installation Owner Group* on page 73
   b. *Installation Owner User Account* on page 73
   c. *Repository Owner Account* on page 74

5. Content Server uses a semaphore. Check to make sure that semaphores are enabled on the host machine.
6. If you plan to install on an AIX host, check to make sure that AIX is running in 32-bit mode.

UNIX Installation Considerations

Before you start to install Content Server on a Linux system, consider the following:

- Because Content Server is not a Java application, there are version-dependent installers.
- Content Server installation requires root access to the host machine.

Content Server installation and the stand-alone DFC installation programs run only in graphical mode. On Linux hosts, this may require that you have the X Window System emulation software installed.

Installing Content Server

This section provides information about how install the Content Server.

You do not need a special license to install the HP version of Content Server.

For supplemental information on Content Server installation, see the EMC Documentum documents described in *Related Documents* on page 27.

To install the Content Server:

1. Locate and run one of the following based on your operating system.

Operating System	Content Server Installer
Windows	ContentServer_<*Operating_System*>.exe
UNIX	ContentServer_<*Operating_System*>.bin

   The Content Server installer program starts and displays the Welcome page.

2. Click **Next.**

   The installer verifies your system requirements and prompts you to type the installation directory.

3. If prompted, select **I accept the terms of the license agreement,** and then click **Next.**

4. (Windows only) Type the full path of the directory in which you want to install the Content Server. For example:

   ```
   C:\Documentum
   ```

   The directory path name cannot include spaces.

5. Click **Next.**

   The installer prompts you to indicate whether you want to install optional components for the DFC.

6. Leave **Developer Documentation (18 MB)** and any other check boxes cleared and click **Next.**
7. (Windows only) Accept the default DFC installation directory `(C:\Program Files\Documentum)` or type the full path of the directory in which you want to install the DFC.

   This directory name can contain spaces.
8. Click **Next.**
9. (Windows only) Accept the default DFC user directory (the `%DM_HOME%` directory) or type the full path of a different directory to use as the DFC user directory.
10. Click **Next.**
11. Type the information for your primary connection broker.

Field Name	Description
Primary Connection Broker Host Name	Name of your primary connection broker host computer.This must be the same machine on which you are installing Content Server.
Port Number	Port number for your primary connection broker host computer. The default port is 1489. The port that you specify must not be used by any other process. Make note of the machine name and port number you type so that you can provide these later as you integrate the document management module with the PPM Server.

12. Click **Next.**
13. Leave the **Enable Trusted Content Services** cleared and click **Next.**

14. Leave the **Enable Content Services for EMC Centera** unselected and click **Next.**

    The installer prompts you to specify the Java port numbers for Apache Tomcat. Content Server uses Tomcat internally to run required Java programs.

    PPM Center does not make use of this Content Server feature.

15. Accept the default port, or type the number of any unused port above 1024 on which Apache Tomcat can listen for requests.
16. Accept the default port, or type the number of any unused port above 1024 to use to stop the Tomcat server. Click **Next.**
17. On the confirmation page, verify your installation parameters, and then click **Next.**
18. (UNIX only) If you have the root user password, select the **Run dm_root_task now** checkbox, and then click **Next** to run the script. Otherwise, leave the checkbox unselected and click **Next.**

    The installer installs the products and components, and then displays its final page. Click **Finish.**

    If you choose not to supply the root password during the procedure, you must run the `$DOCUMENTUM/dba/dm_root_task` script or the `sudo` command after installation and before you continue as root. Otherwise, the connection broker cannot start, and you cannot create a repository.

    Navigate to the `$DM_Install` directory (as root), and run the script as follows:

    ```
    ./dm_root_task
    ```

    Type the group ID of the Documentum user.

    The installer prompts you to indicate whether you want to configure the server now or later.

19. (Windows only) Select **Configure server now,** and then click **Next.**

    The installer prompts you to indicate whether you want to restart your computer.

20. Select **Yes.**

    After you restart your machine, the configuration process starts automatically.

21. Proceed to *Configuring Content Server Components*.

Configuring Content Server Components

If, after you completed the installation, you clicked **Next,** the Content Server configuration wizard starts automatically so that you can complete begin to configure Content Server components, as described in *Configuring Content Server*.

About Creating a Repository

You must create a repository for every PPM Server in your configuration. To do this, you use the Content Server configuration wizard. This section describes issues to attend to before you run the wizard, and provides some tips for troubleshooting issues with the wizard.

Every repository you create requires the following:

- A service listed in the `/etc/services` directory.
- A unique database schema created in an Oracle database.

  Multiple repositories cannot share a schema.

  HP recommends that you use the same string for the user name of the Documentum installation owner and for the name of the Oracle database schema created for the repository.
- As you create a repository using the configuration wizard, you are prompted to specify an ID for it. Type a number between 0 and 16,777,215 that is unique to the repository.
- The configuration wizard parses your `tnsnames.ora` file to list database SID information, and prompts you to select the database to use. If the

database that contains your schema is not listed, the problem might be in the `tnsnames.ora` file.

After the information is collected, the installation program creates and configures the repository.

If any errors occur, look in the `$DM_HOME/install/setup/*.log` directory too find log information that can help you diagnose these errors.

- If you add a repository to the existing Content Server (or modify an existing repository associated with Content Server), then you must stop the connection broker, and then restart it before you can access the new (or modified) repository. For instructions on how to stop and start the connection broker, see *Starting and Stopping the Connection Broker and Repository* on page 95.
- If, after you create a repository, you cannot start the connection broker or start and connect to the repository, try to start and connect manually.

  To determine the source of the problem, see the error information reported to the console.

  Before the configuration utility can create a repository, it tries to start the connection broker. If it cannot start the connection broker, it cannot continue.

Configuring Content Server

These instructions assume that after entering all necessary data and making proper selections that you click **Next** to navigate to the next page in the wizard.

To configure Content Server components:

1. Restart your computer and log on as the Content Server installation owner.
2. Start the configuration wizard.

   The Welcome page opens.

   If the configuration wizard does not start automatically, locate and run either `Server_Configuration_Program.exe` or `Server_Configuration_Program.bin`.

3. Click **Next.**

   The configuration program performs a series of system checks, and for Windows prompts you to type the Content Server installation owner password.

4. (Windows only) Type the Content Server installation owner password.

5. Click **Next.**

6. Leave the **Enable Trusted Content Services** check box cleared**.**

7. If prompted, leave the **License Key** field empty.

8. Leave the **Enable Content Services for EMC Centera** checkbox cleared**.**

   The configuration prompts you to choose between the express and custom configuration methods.

   If your organization has an external storage solution such as network attached storage (NAS) or storage area network (SAN) in place, do not use the Documentum express configuration procedure. You must use the custom configuration instead. For information about custom and express methods for configuring Content Server components, see the EMC Documentum *Content Server Installation Guide.*

9. If you are not using an external storage solution such as NAS or SAN, select **Express Configuration.** If you are using an external storage solution, select **Custom Configuration,** and then follow the instructions provided.

   The custom configuration wizard may prompt you for additional information. For advanced information on how to perform a custom configuration, see the EMC Documentum *Content Server Installation Guide*.

   Later, if you want to update or delete a repository or perform another configuration task, you can run the wizard again and select the custom configuration option.

   The configuration wizard prompts you for repository information.

10. In the **Repository Name** field, type a name for the repository to create.

    The repository name can contain up to 32 characters. Make a note of the name so that you can provide it later when you configure PPM Server.

11. In the **Repository ID** field, type a unique ID number between zero (0) and 16,777,215 for the repository.
12. (Optional) In the **Repository description** field, you can type a description of the repository.
13. In the **Repository size** list, select one of the following.

Size	Description	Recommended
Small	Single table space with an initial data file size of 100 MB.	
Medium	Separate table spaces for data and indexes, with initial data file size of 180 MB and an initial index file size of 180 MB. Adjust the size later, if necessary.	X
Large	Separate table spaces for data and indexes, with initial data file size of 250 MB and initial index file size of 250 MB.	

As it creates a schema, the configuration wizard creates a new tablespace in the database.

14. (Windows only) In the **Authentication Domain** list, select the authentication domain.
15. (Windows only) For **Service Startup Type,** click one of the following to set the repository service at server restart behavior:
    - **Automatic**
    - **Manual**

    If other services must start before Content Server can start, then specify a manual startup. For example, start the Oracle database that contains the repository, if it resides on the same machine.
16. (UNIX only) In the **Service Name** field, type the services name for the repository.

    This is the service name you specified in the services file.

The configuration wizard prompts you to indicate whether you want to create an Oracle database user account or use an existing account.

17. Select **Create new Oracle user account and tablespaces.**

18. Type or Select the following database connection information.

Field Name	Description
Database Connection String	The database where you want to install the repository. The **Database Connection String** list only displays the names of databases that are correctly configured in the Oracle client `tnsnames.ora` file and accessible from this machine.
Database User Name	The user name for the Oracle schema. The default name is the same as the repository name you provided, see step 10 on page 60.
Database User Password	The password for the Oracle schema.
Confirm User Password	The password for the Oracle schema.
Database Administrator Name	The user name for the SYSTEM account on the Oracle database.
Database Administrator Password	The password for the SYSTEM account on the Oracle database.

19. To send email notifications for some system events, Content Server requires an SMTP server.

    a. In the **SMTP Server Name** field, type the name of an SMTP server on your network.

    b. In the **Installation Owner's Email Address** field, type the email address of the person you want to receive Content Server email notifications.

    Email traffic is minimal. Under normal operating conditions, this account receives no email messages.

20. If you are running the PPM Server on a machine other than the Content Server host, install the DFC on the PPM Server.

    For information about how to install the DFC, see Chapter 5, *Installing Documentum Foundation Classes,* on page 119.

    The server configuration wizard displays a progress bar. Configuration takes several minutes.

21. After configuration finishes, review the information displayed on the summary page.

22. On the confirmation page, click **Finish.**

23. Run the wizard again if you have more than one PPM Server in your configuration.

Post-Installation Tasks

After you complete Content Server installation and configuration, do the following:

1. Use the Interactive DQL editor (IDQL) tool to test the installation.

   For information about IDQL and how to use it, see the *EMC Documentum Content Server Administration Guide.* For information on how to execute an idql statement, see *Example query:* on page 39.

2. Restart the machine.

3. Check to make sure that the PPM Server is not running.

4. Run the `kConfig.sh` script.

Starting and Stopping the Connection Broker and Repository

This section provides steps you can use to stop and start the connection broker and repository on Windows or UNIX systems. It also contains information about what to do if you cannot start the repository.

Because the connection broker and repository run as separate processes on Content Server, you must start and stop them independently. To start and stop a repository, the connection broker must be running. This means that you must start the connection broker before starting the repository, and you must stop the repository before you stop the connection broker.

To start the connection broker and repository:

1. Start the connection broker and then wait for a minute.
2. Only after the connection broker starts, start the repository.

To stop the connection broker and repository, use the reverse process, stopping the repository first, and then the connection broker.

Methods to Start and Stop the Connection Broker and Repository

Depending on the operating system that your Content Server is running, you can start and stop the connection broker and repository using one of the following methods.

Table 2-1. Starting and stopping the connection broker and repository

Operating System	Use	Details
Windows	Services page of the Microsoft Management Console	Because the connection broker and repository run as Windows services, you can start and stop them from the Services page of the Microsoft Management Console.
Windows	Documentum Server Manager	On the Content Server host: 1. Select **Start > Programs > Documentum > Documentum Server Manager.** 2. Use the **Start** or **Stop** buttons on the Repository and Connection Broker tabs.
Windows and UNIX	Command window	Navigate to the `$DOCUMENTUM/dba` directory. To stop a repository, run `dm_shutdown_<Repository>`. To start a repository, run `dm_start_<Repository>`. To stop the connection broker, run `dm_stop_<Connection_Broker>`. To start the connection broker, run `dm_launch_<Connection_Broker>`.

If You Cannot Start the Repository

If you cannot start the repository, use the following command sequence to produce a log file for debugging purposes.

On Windows

```
> cd %DOCUMENTUM%\dba
> .\dm_start_<Repository>
> .\dm_shutdown_<Repository>
> cd log
> ls <Repository>.log*
```

On UNIX

```
> cd $Documentum/dba
> ./dm_start_<Repository>
> ./dm_shutdown_<Repository>
> cd log
> ls <Repository>.log*
```

The log file provides a message similar to the following:

```
Mon Jan 14 08:59:21 2005 996756 [DM_SERVER_E_REGISTER_IN_USE]
error: "The server failed to register itself as there is already
a server on port (4678). Error (515) Service name already in
use. errno: 125, message: Address already in use."
```

Content Server session logs are written to the `$DOCUMENTUM/dba/log` directory. Each repository running on a Content Server has a corresponding log file, which is created every time Content Server is restarted.

The current log file for a repository is named `<Repository>.log`. Previous log files names have the suffix `.save.<Time_Stamp>`.

For example, if your repository is named PPMdocs, then, in the `$DOCUMENTUM/dba/log` directory, you would see something similar to the following:

```
PPMdocs.log
PPMdocs.log.save.09.12.2000.18.05.14
PPMdocs.log.save.10.11.2009.15.21.25
```

For more information about Content Server log files, see the EMC Documentum *Content Server Administration Guide.*

Determining the SMTP Mail Server Host

On Windows hosts, Content Server must be able to connect to an SMTP mail server. The SMTP server can be an SMTP server located on your network or it can be the SMTP server provided with Windows. During the installation or upgrade procedure, you must provide the name or IP address of the computer hosting the SMTP server.

If a valid SMTP server host name is not available during installation, supply an invalid host name so that the installation can finish. Do not leave the field empty. After installation, you can add a valid SMTP server host name to the `smtp_server` attribute of the server config object, and then re-initialize the server.

For more information, see the *EMC Documentum Content Server Installation Guide.*

Setting Up the Installation Owner Account

Select or create a Windows user to function as the installation owner. You must use this account when you install Content Server.

Content Server runs under the account of the installation owner. Use this account to perform all Content Server administration.

The Windows user that you log on as for installation must meet the following requirements:

- The installation owner account can be a local or domain account, but if it is a domain account, then it must be a member of the local machine's Administrators group.
- The installation owner account may be a local account on the Content Server host or a domain account in the domain where Content Server is installed.
- The installation owner account must have Full Control permission in the `C:\Documentum\` directory, as well as write permission on the directory from which the installer is run.
- The installation owner account must not be the same account as the Windows administrator.

- The installation owner account must have the following rights, which are granted during installation:
  - Act as part of the operating system
  - Create a token object
  - Increase quotas
  - Log on as a service
  - Log on locally
  - Replace a process-level token

  On a standard Windows system, these rights are automatically inherited with membership in the local Administrators group. The installer program checks for these rights and grants them if necessary.

- The user name must contain all ASCII characters, restricted to alphanumeric, underscore (_), and hyphen (-) characters. The first character must be a letter.

  The user name you specify when you install Content Server must match this Windows user name including case, even though Windows user accounts are not case-sensitive.

- The password is restricted to alphanumeric characters, hyphens (-), underscores (_), and periods (.).

- The installation owner must have an email account on the SMTP mail server.

As installation owner, you can perform all administrative and maintenance tasks associated with the installation. After installation the you must enable the purge audit job to remove audit trail entries from the repository. For information, see “Audit Management” in the *EMC Documentum Content Server Administration Guide.*

Setting Up the Repository Owner Account

The repository owner is the user who owns all objects in the database and whose account is used to connect to the database.

The repository owner's user name must contain all ASCII characters, restricted to alphanumeric, underscore (_), and hyphen (-) characters. The first character must be a letter.

The repository owner's password must consist of letters, numbers, dashes, underscores, and periods.

During server installation, you can designate an existing database account for database access. If you designate an existing account to use for database access, that user becomes the repository owner.

Alternatively, the Setup program can create a database user during installation. The new user then becomes the repository owner. If the Setup program creates the database user, the database user's name defaults to the name of the repository (but you may change this during installation).

The repository owner's RDBMS user account must have the following privileges:

- Connect to the database
- Create tables, views, and indexes in the database
- Insert records (rows) into tables
- Drop tables, views, and indexes

If you allow the Content Server Setup program to create a database account for the repository owner, the required privileges are granted to the repository owner automatically.

For more information, see the *EMC Documentum Content Server Administration Guide.*

Whether the repository owner needs a Windows account depends on the features and database you use, as follows:

- To use Microsoft® Cluster Services, the repository owner must have an account in the domain in which you install the repository.
- To add users and groups to a repository, the repository owner must have an account in the same domain as the installation owner.
- To use replication, the repository owner must have an operating system or domain account.

  If the repository owner does not have such an account, Content Server functions correctly except that you cannot use replication, and at Content Server startup, you see the following error message in the server log:

```
Tue Feb 18 21:23:16 2008[DM_STARTUP_I_DOCBASE_OWNER_NOT_
FOUND]:
The database user (pfieldnet_dev) is not a valid NT User.
This is the user specified in your server.ini file as the
database_owner attribute. If you are running the optional
Replication Services package, you must create a valid NT
User account for this user.
```

HP recommends that you set up a Windows account for the repository owner.

Setting Up the Repository User Accounts

Repository users are the end users in the repository. These users may own documents or other objects that are stored in a repository, but they have no particular responsibilities for the maintenance of either the repository or the installation.

On Windows, if the default user authentication is used, each user must have a Windows account in the domain where Content Server is installed. If LDAP authentication or inline password authentication is used, this is not a requirement.

Environment Variables

If you are installing Content Server on UNIX or Linux, you must set certain environment variables in the installation owner's environment. If you use the `dm_launch_server_config_program.sh` script to start the Content Server configuration program, all required environment variables, except for those required by each database, are set automatically. If you do not use the `dm_launch_server_config_program.sh` script, you must manually set all environment variables.

For a detailed list of environment variables that must be set before you install Content Server on UNIX or Linux systems, see "Appendix A, Required Environment Variables for UNIX and Linux," in the *EMC Documentum Content Server Installation Guide.*

Setting Up the Installation Directories

Before you install Documentum on a Linux system, you must determine the directories into which you will install Content Server, and then set two environment variables in the installation owner's environment. You can create the installation directories before you install the server or you can let the installation program create the directories from your input. If you allow the installation program to create the directories, make sure that the directories you provide during installation match those in the environment variables.

The environment variables and installation directories must contain only ASCII characters. The name of the Documentum installation directory must not contain spaces.

Make sure that the following environment variables are correctly set:

- The `$DOCUMENTUM` environment variable corresponds to the directory where you plan to install Content Server. The installation owner must have read, write, and execute permission on the `$DOCUMENTUM` directory and its subdirectories. On Windows systems, the default is `/Documentum` on the current host. On UNIX and Linux systems, no default directory exists.
- Set the `$DM_HOME` to `$DOCUMENTUM/product/<Version_Number>`. (For example, `$DOCUMENTUM/product/6.5`.)

- The `$DOCUMENTUM_SHARED` environment variable sets the DFC installation directory.

For information on how to define `$DOCUMENTUM` and `$DM_HOME` in the installation owner account, see *Installation Owner User Account* on page 73. For detailed information about the file structure, scripts, and configuration objects that are a part of a Content Server installation, see the *EMC Documentum Content Server Installation Guide.*

Default Operating System Permissions

When Content Server creates directories and files in the server installation, it assigns default operating system permissions to those directories and files. The default permissions assigned to directories are 777 and the default permissions assigned to files are 666.

You can change the defaults assigned to public directories and files by setting the umask key in the `server.ini` file. Setting umask affects all public directories and files created after the key is set.

The umask key works similarly to the UNIX umask functionality. The value is subtracted from the default permissions to determine the actual permissions assigned to a file or directory. For example, if you set umask=2, then the default permissions assigned to directories becomes 775 and the default permissions for files becomes 662. Or, if you set umask=20, then the permissions become 757 for directories and 626 for files.

To change the default permissions for all files and directories, you must modify the `server.ini` file before Content Server starts. Choose Custom repository configuration, then modify the `server.ini` file by adding the umask key and a value.

Distributed Configurations and UTC Time

If you install a distributed configuration, make sure that all host computers in the configuration are set to the same UTC time.

Required Groups

This section describes the Linux groups necessary to install Content Server. On Linux, every Content Server installation must have group and user accounts for the installation owner, repository owner, and repository users. The installation owner group and individual accounts must be set up before you install the Content Server software. You can set up the repository owner (database user) account in the database either before installation or during repository configuration. Repository users are created after the repository is created.

Installation Owner Group

To support external password validation, set up a group account whose members are the installation owner, any other Content Server administrators, and repository owners. This group will own the external password validation program.

Required Individual Accounts

On Linux, every Content Server installation must have group and user accounts for the installation owner, repository owner, and repository users. Some of these accounts must be in place before you begin to install. You can set up other accounts during or after installation.

Every Content Server installation must have an owner and each repository must have an owner. Each repository has users. The individual responsibilities of the installation owner, repository owner, and repository users are described in the following sections.

Installation Owner User Account

Create a Linux user account (referred to in this document as dctm) that you can use to install, execute, and administer Content Server.

The user account password must not contain special characters such as $ or @.

The installation owner is the user whose account is used to install Content Server and create a repository. The server runs under the installation owner account.

The installation owner must have an operating system account. The installation owner user name must consist of ASCII alphanumeric characters, dashes (-) and underscores (_). The first character must be a letter. The installation owner password must consist of letters, numbers, dashes, underscores, and periods.

The installation owner account must have read, write, and execute permission on the `/var/tmp` directory and on the installation directory (`$DM_Install` and its subdirectories).

Do not use the root account as the installation owner account.

As installation owner, you can perform all administrative or maintenance tasks associated with repository installation. After you create a repository, you can create additional repository accounts with Superuser or System Administrator privileges. You can also use those accounts for repository administration.

After you install Content Server, you must enable the automatic deletion of old audit trail objects from the repository. For information on how to do this, see the *EMC Documentum Content Server Installation Guide.*

You can create an operating system account to use exclusively for server installation and repository maintenance. You can use a single user account as installation owner for multiple Documentum installations on your network.

On Linux, you can create multiple server installations on a single host computer. You can have separate installation owners for each installation or you can use separate environment files to enable a single installation owner to own all of the installations.

Repository Owner Account

The repository owner is the user whose account is used to connect to the database. The repository owner owns all objects in the database. Each repository must have a unique repository owner.

The repository owner user name and password must consist of letters, numbers, dashes (-) and underscores (_). The first character in the name must be a letter, and all characters must be ASCII characters. The corresponding password must consist of a combination of letters, numbers, dashes, underscores, and periods.

During server installation, you can specify an existing database account for database access. If you designate an existing account to use for database access, that user becomes the repository owner. Alternatively, the installer can create a database user during installation. The new user then becomes the repository owner. If the installer creates the database user, the database user name defaults to the repository name.

Assign the following privileges to the database user account of the repository owner:

- Connect to the database
- Create tables, views, and indexes in the database
- Insert records (rows) into tables
- Drop tables, views, and indexes
- Unlimited tablespace

If you allow the Content Server installer to create a database account for the repository owner, the required privileges are automatically granted to the repository owner. If you create the account before you run the installer, assign the `CONNECT` and `RESOURCE` privileges to the account.

Setting Up the Linux Services File

The `services` file contains information on the port numbers used by the services or processes that run on a host. The `services` file must contain an entry for each repository running on a host.

On Linux, you must manually create the service name entry in the `services` file before you install the server. For each repository running on the host, the service name entries are made in one of the following:

- `/etc/services` file
- NIS services map

You must have root privileges to edit the `/etc/services` file.

The repository does not have a default service name or default port number. The service name you place in the `services` file must be the same name you provide during repository configuration, which is then used to create the `server.ini` file. The service name for the repository can be the same as the repository name, but this is not a requirement.

As root, create the service name entries using the following format:

```
<Service_Name> <Port_Number>/tcp #Comment here, if needed
```

or

```
<Repository> <Repository_Port>/tcp # RepositoryForPPM
```

<Repository> and *<Repository_Port>* are user-specific. The port must be an unused port on the machine running Content Server, and the repository name must be an alphanumeric string unique to the repository. The repository name can contain hyphens (-) and underscores (_), but no other special characters.

If Network Information Service (NIS) is running, the local services file `(/etc/services)` is ignored. Place the entries in the NIS services map. Use the `ypwhich` command to identify the host name of the NIS master server, if one exists.

The port number can be any unused port number greater than 1024. (Linux reserves port numbers up to 1024 for system use.) For example, if the repository service were named mugwort, the services file entry might be:

```
mugwort 1497/tcp # repository
```

If you have multiple repositories on a single machine, create a services file entry for each repository. Make sure that each has a different name and port number.

Content Server Installation Directories for Linux

You can create the installation directories before you install the server or you can let the Content Server installer create the directories from your input.

If you allow the server installer to create the directories, make sure that the directories you specify during installation match those in the environment variables.

Determine the directories where you plan to install Content Server, and then set the `$DM_INSTALL` and `$DM_HOME` environment variables in the installation owner environment.

The `$DM_INSTALL` environment variable corresponds to the directory where you plan to install Content Server. The installation owner must have read, write, and execute permission on the `$DM_INSTALL` directory and its subdirectories. The `$DM_HOME` environment variable corresponds to the `$DM_INSTALL/product/<Version>` directory.

The environment variables and installation directories must contain only ASCII characters. The directory in which you install Content Server must not contain spaces or any of the following characters:

```
! \ / : * ? " < > |
```

Default Operating System Permissions on Linux Directories and Files

As Content Server creates directories and files in the server installation, it assigns default operating system permissions to them. The default permissions assigned to directories are 777 and the default permissions assigned to files are 666. To change the defaults assigned to public directories and files, set the `umask` key in the `server.ini` file. Setting `umask` affects all public directories and files created after you set the key.

The `umask` key works similarly to the UNIX umask functionality. The value is subtracted from the default permissions to determine the actual permissions assigned to a file or directory. For example, if you set `umask=2`, then the default permissions assigned to directories becomes 775 and the default permissions for files becomes 662. Or, if you set `umask=20`, then the permissions become 757 for directories and 626 for files.

Preparing to Install Content Server

Before you install Content Server, you must perform some configuration steps and set up the required user accounts on the system.

The configuration tasks are as follows:

1. Make sure that the machine on which you plan to install Content Server has access to a valid SMTP server for email notifications.

   Although PPM Center does not use this notification mechanism, you cannot install Content Server without it. If a valid SMTP server host name is not available during installation, supply an invalid host name so that the installation can finish. Do not leave the field blank.

2. Stop all nonessential services and stop all nonessential programs.

3. (Windows only) Add the following environment variable:

   Edit the `PATH` variable to include:

   <DFC_Home>`\`*<Java_Version>*

   where *<Java_Version>* is the Java Runtime Environment (JRE) version supported for the Content Server version you plan to install. The DFC installation location is set during server installation. It is typically `C:\Program Files\Documentum`.

4. Obtain the Content Server bundle for your operating system and copy it to a temporary directory from which to run the installation.

   This temporary directory is referred to in this manual as `$DM_INSTALL`.

5. Use an extraction utility such as UnZip or use the Java `jar xvf` command to extract the installation bundle and extract the following files:

6. Select the installation directory.

   The directory path name cannot contain spaces or special characters.

7. Check the regional and language options settings on Windows to make sure that the selected date format displays a four-digit year.
8. If you install a distributed configuration, make sure that all host computers in the configuration are set to the same Universal Time Coordinated (UTC) time.

Preparing to Install Content Server on a UNIX or Linux System

Before you install Content Server on a Linux system, make sure that the following tasks are completed:

1. *Content Server Installation Directories for Linux* on page 77
2. *Setting Up the Linux Services File* on page 75
3. Set up required Linux accounts.

   Set up a group account, an installation owner account, and a repository owner account.

   a. *Installation Owner Group* on page 73

   b. *Installation Owner User Account* on page 73

   c. *Repository Owner Account* on page 74
4. Content Server uses a semaphore. Make sure that semaphores are enabled on the host machine.
5. Make sure that no value is set for the DM or DOCUMENTUM environment variables, as follows:

```
$ env | grep DM
$ env | grep DOCUMENTUM
```

Linux Installation Considerations

Before you install Content Server on Linux, consider the following:

- Because Content Server is not a Java application, there are version-dependent installers.
- Content Server installation requires root access to the host machine.

Preparing to Integrate PPM Center with a Stand-Alone Instance of EMC Documentum Enterprise Edition

If your organization already has a stand-alone instance of EMC Content Server EE (version 6.5) installed, you can integrate PPM Center 9.10 with that instance to implement HP document management in. To to this, you must first purchased and download the HP PPM Center Documentum Connector software.

This section provides information on what to do before you perform the integration. To integrate the instance with PPM Center, you use the configuration tool. Instructions on how to run the configuration utility are provided in Chapter 7, *Enabling HP Document Management,* on page 143.

To prepare to integrate PPM Center with a stand-alone instance of EMC Content Server EE version 6.5:

1. Purchase and download the HP PPM Center Documentum Connector software from the HP PPM Center download site.
2. Stop the PPM Server.

   For information about how to stop and start the PPM Server, see the PPM Center *Installation and Administration Guide*.

3. To install the `ppmdocumentum.jar` file, run `kDeploy.sh` (located in the `<PPM_Home>/bin` directory).
4. Place the `ppmdocumentum.jar` file into the following directory:

   `<PPM_Server_Name>\server\<PPM_Server_Name>\deploy\itg.war\WEB-INF\lib`

5. If document management is enabled on your PPM Center 7.5 installation, then after you deploy the HP PPM Center Documentum Connector software, do the following:

   a. Obtain the data migration tool (dump and load) from HP Software Support.

b. When you upgrade PPM Center, use the data migration tool to migrate data from the old Content Center repository to the repository on your stand-alone instance.

   To use the data migration tool, follow the instructions provided with the tool.

6. After you deploy the HP PPM Center Documentum Connector software, you can perform the integration itself. For instructions, see *Configuring Document Management in PPM Center* on page 145.

3 Installing and Configuring Content Server

This chapter provides the instructions for installing the embedded Content Server EE software. Before you begin, make sure that you have performed all of the steps required to prepare for installation, which are described in Chapter 2, *Preparing to Install EMC Documentum Content Server,* on page 31.

Installing Content Server

This section provides information about how install the embedded Content Server software that HP provides for the HP document management solution.

You do not need a special license to install the HP version of Content Server.

For supplemental information on Content Server installation, see the EMC documents described in *Related Documents* on page 27.

To install Content Server:

1. Locate and run one of the following based on your operating system.

Operating System	Content Server Installer
Windows	ContentServer_<*Operating_System*>.exe
UNIX	ContentServer_<*Operating_System*>.bin

   The Content Server installer program starts and displays the Welcome page.

2. Click **Next.**

   The installer verifies your system requirements and prompts you to type the installation directory.

3. If prompted, select **I accept the terms of the license agreement,** and then click **Next.**

4. (Windows only) Type the full path of the directory in which you want to install Content Server. For example:

   ```
   C:\Documentum
   ```

   The directory path name cannot include spaces.

5. Click **Next.**

   The installer prompts you to indicate whether you want to install optional components for the DFC.

6. Leave **Developer Documentation (18 MB)** and any other check boxes cleared and click **Next.**
7. (Windows only) Accept the default DFC installation directory `(C:\Program Files\Documentum)` or type the full path of the directory in which you want to install the DFC.

   This directory name can contain spaces.
8. Click **Next.**
9. (Windows only) Accept the default DFC user directory (the `%DM_HOME%` directory) or type the full path of a different directory to use as the DFC user directory. Click **Next.**
10. Type the information for your primary connection broker.

Field Name	Description
Primary Connection Broker Host Name	Name of your primary connection broker host computer.This must be the same machine on which you are installing Content Server.
Port Number	Port number for your primary connection broker host computer. The default port is 1489.The port that you specify must not be used by any other process. Make note of the machine name and port number you type so that you can provide these later as you integrate the document management module with the PPM Server.

11. Click **Next.**
12. Leave the **Enable Trusted Content Services** cleared and click **Next.**

13. Leave the **Enable Content Services for EMC Centera** cleared and click **Next.**

    The installer prompts you to specify the Java port numbers for Apache Tomcat. Content Server uses Tomcat internally to run required Java programs.

    PPM Center does not make use of this Content Server feature.

14. Accept the default port, or type the number of any unused port above 1024 on which Apache Tomcat can listen for requests.
15. Accept the default port, or type the number of any unused port above 1024 to use to stop the Tomcat server. Click **Next.**
16. On the confirmation page, verify your installation parameters, and then click **Next.**
17. (UNIX only) If you have the root user password, select the **Run dm_root_task now** check box, and then click **Next** to run the script. Otherwise, leave the check box cleared and click **Next.**

    The installer installs the products and components, and then displays its final page. Click **Finish.**

    If you choose not to supply the root password during the procedure, you must run the `$DOCUMENTUM/dba/dm_root_task` script or the `sudo` command after installation and before you continue as root. Otherwise, the connection broker cannot start, and you cannot create a repository.

    Navigate to the `$DM_Install` directory (as root), and run the script as follows:

    ```
    ./dm_root_task
    ```

    Type the group ID of the Documentum user.

    The installer prompts you to indicate whether you want to configure the server now or later.

18. (Windows only) Select **Configure server now,** and then click **Next.**

    The installer prompts you to indicate whether you want to restart your computer.

19. Select **Yes.**

    After you restart your machine, configuration starts automatically.

20. Proceed to *Configuring Content Server Components*.

Configuring Content Server Components

If, after you completed the installation, you clicked **Next,** the Content Server configuration wizard starts automatically so that you can begin to configure Content Server components, as described in *Configuring Content Server*.

About Creating a Repository

You must create a repository for every PPM Server in your configuration. The Content Server configuration wizard takes you through that process. This section describes some of the issues to consider before you run the wizard.

Consider the following for every repository you create:

- A repository requires a service listed in the `/etc/services` directory.
- A repository requires a unique database schema created in an Oracle database.

  Multiple repositories cannot share a schema.

  HP recommends that you use the same string for the user name of the Documentum installation owner and for the name of the Oracle database schema created for the repository.
- When the Content Server configuration wizard prompts you to specify an ID for the repository (see step 10 on page 85), type a number between 0 and 16,777,215 that is unique to the repository.
- The configuration wizard parses your `tnsnames.ora` file to list database SID information, and prompts you to select the database to use. If the database that contains your schema is not listed, the problem might be in the `tnsnames.ora` file.

  After the information is collected, the installation program creates and configures the repository.

  To find log information that can help you diagnose any errors that occur, look in the following directory:

  ```
  $DM_HOME/install/setup/*.log
  ```

- If you add a repository to the existing Content Server (or modify an existing repository associated with Content Server), then you must stop the connection broker, and restart it before you can access the new (or modified) repository. For information about how to stop and start the connection broker, see *Starting and Stopping the Connection Broker and Repository* on page 95.
- If, after you create a repository, you cannot start the connection broker or start and connect to the repository, try to start and connect manually.

  For information about the source of the problem, refer to the error information reported to the console.

  Before the server configuration utility can create a repository, it tries to start the connection broker. If it cannot start the connection broker, it cannot continue.

Configuring Content Server

To configure Content Server components:

1. Restart your computer and log on as the Content Server installation owner.
2. Start the Content Server configuration wizard.

   The Welcome page opens.

   If the configuration wizard does not start, locate and run one of the following:

   - `Server_Configuration_Program.exe`
   - `Server_Configuration_Program.bin`
3. Click **Next.**

   The configuration program performs a series of system checks, and for Windows systems, prompts you to type the Content Server installation owner password.
4. (Windows only) Type the Content Server installation owner password.
5. Click **Next.**
6. Leave the **Enable Trusted Content Services** check box cleared**.**
7. If prompted, leave the **License Key** field empty.
8. Leave the **Enable Content Services for EMC Centera** check box cleared**.**

   The configuration prompts you to choose between the express and custom configuration methods.

If your organization has an external storage solution such as network attached storage (NAS) or storage area network (SAN) in place, do not use the Documentum express configuration procedure. You must use the custom configuration instead. For information about custom and express methods for configuring Content Server components, see the *EMC Documentum Content Server Installation Guide.*

9. If you are not using an external storage solution such as NAS or SAN, select **Express Configuration.** If you are using an external storage solution, select **Custom Configuration,** and then follow the instructions provided.

The custom configuration wizard may prompt you for additional information. For advanced information on how to perform a custom configuration, see the *EMC Documentum Content Server Installation Guide*.

Later, if you want to update or delete a repository or perform another configuration task, you can run the wizard again and select the custom configuration option.

The configuration wizard prompts you for repository information.

10. In the **Repository Name** field, type a name for the repository to create.

    The repository name can contain up to 32 characters. Make a note of the name so that you can provide it later when you configure PPM Server.

11. In the **Repository ID** field, type a unique ID number between zero (0) and 16,777,215 for the repository.

12. (Optional) In the **Repository description** field, you can type a description of the repository.

13. In the **Repository size** list, select one of the following.

	Description
Small	Single table space with an initial data file size of 100 MB.
Medium	(Recommended) Separate table spaces for data and indexes, with initial data file size of 180 MB and an initial index file size of 180 MB. Adjust the size later, if necessary.
Large	Separate table spaces for data and indexes, with initial data file size of 250 MB and initial index file size of 250 MB.

    As it creates a schema, the configuration wizard creates a new tablespace in the database.

14. (Windows only) In the **Authentication Domain** list, select the authentication domain.

15. (Windows only) For **Service Startup Type,** click one of the following to set the repository service at server restart behavior:
    - **Automatic**
    - **Manual**

    If other services must start before Content Server can start, then specify a manual startup. For example, start the Oracle database that contains the repository, if it resides on the same machine.
16. (UNIX only) In the **Service Name** field, type the services name for the repository.

    This is the service name you specified in the services file.

    The configuration wizard prompts you to indicate whether you want to create an Oracle database user account or use an existing account.
17. Select **Create new Oracle user account and tablespaces.**
18. Provide the database connection information listed in the following table.

Label	Description
Database Connection String	Database in which to install the repository. The **Database Connection String** list displays only the names of databases that are correctly configured in the Oracle client `tnsnames.ora` file and accessible from this machine.
Database User Name	User name for the Oracle schema. The default name is the same as the repository name you provided, see step 10 on page 91.
Database User Password	Password for the Oracle schema.
Confirm User Password	Password for the Oracle schema.
Database Administrator Name	User name for the SYSTEM account on the Oracle database.
Database Administrator Password	Password for the SYSTEM account on the Oracle database.

19. To send email notifications for some system events, Content Server requires an SMTP server.

    a. In the **SMTP Server Name** field, type the name of an SMTP server on your network.

    b. In the **Installation Owner's Email Address** field, type the email address of the person you want to receive Content Server email notifications.

       Email traffic is minimal. Under normal operating conditions, this account receives no email messages.

20. If you are running the PPM Server on a machine other than the Content Server host, install the DFC on the PPM Server.

    For information about how to install the DFC, see Chapter 5, *Installing Documentum Foundation Classes,* on page 119.

    The server configuration wizard displays a progress bar. Configuration takes several minutes.

21. After configuration finishes, review the information displayed on the summary page.

22. On the confirmation page, click **Finish.**

23. Run the wizard again if you have more than one PPM Server in your configuration.

Post-Installation Tasks

After you complete Content Server installation and configuration, do the following:

1. Use the Interactive DQL editor (IDQL) tool to test the installation.

   For information about IDQL and how to use it, see Appendix B, “IAPI and IDQL” in the *EMC Documentum Content Server Administration Guide.* For information on how to execute an idql statement, see *Content Server Configuration Concepts* on page 37.

2. Restart the machine.

3. Check to make sure that the PPM Server is not running.

4. Run the `kConfig.sh` script.

Starting and Stopping the Connection Broker and Repository

This section provides steps you can use to stop and start the connection broker and repository on Windows or UNIX systems. It also contains information about what to do if you cannot start the repository.

Because the connection broker and repository run as separate processes on Content Server, you must start and stop them independently. To start and stop a repository, the connection broker must be running. This means that you must start the connection broker before starting the repository, and you must stop the repository before you stop the connection broker.

To start the connection broker and repository:

1. Start the connection broker and then wait for a minute.
2. Only after the connection broker starts, start the repository.

To stop the connection broker and repository, use the reverse process, stopping the repository first, and then the connection broker.

Methods to Start and Stop the Connection Broker and Repository

Depending on the operating system that your Content Server is running, you can start and stop the connection broker and repository using one of the following methods.

Table 3-1. Starting and stopping the connection broker and repository

Operating System	Use	Details
Windows	Services page of the Microsoft Management Console	Because the connection broker and repository run as Windows services, you can start and stop them from the Services page of the Microsoft Management Console.
Windows	Documentum Server Manager	On the Content Server host: 1. Select **Start > Programs > Documentum > Documentum Server Manager.** 2. Use the **Start** or **Stop** buttons on the **Repository** and **Connection Broker** tabs.
Windows and UNIX	Command window	Navigate to the `$DOCUMENTUM/dba` directory. To stop a repository, run `dm_shutdown_<Repository>`. To start a repository, run `dm_start_<Repository>`. To stop the connection broker, run `dm_stop_<Connection_Broker>`. To start the connection broker, run `dm_launch_<Connection_Broker>`.

If You Cannot Start the Repository

If you cannot start the repository, use the following command sequence to produce a log file for debugging purposes.

On Windows

```
> cd %DOCUMENTUM%\dba
> .\dm_start_<Repository>
> .\dm_shutdown_<Repository>
> cd log
> ls <Repository>.log*
```

On UNIX

```
> cd $Documentum/dba
> ./dm_start_<Repository>
> ./dm_shutdown_<Repository>
> cd log
> ls <Repository>.log*
```

The log file provides a message similar to the following:

```
Fri Jul 24 07:59:21 2009 996756 [DM_SERVER_E_REGISTER_IN_USE]
error: "The server failed to register itself as there is already
a server on port (4678). Error (515) Service name already in
use. errno: 125, message: Address already in use."
```

Content Server session logs are written to the `$DOCUMENTUM/dba/log` directory. Each repository running on a Content Server has a corresponding log file, which is created every time Content Server is restarted.

The current log file for a repository is named `<Repository>.log`. Previous log files names have the suffix `.save.<Time_Stamp>`.

For example, if your repository is named “PPMdocs,” then, in the `$DOCUMENTUM/dba/log` directory, you would view something similar to the following:

```
PPMdocs.log
PPMdocs.log.save.09.12.2008.18.05.14
PPMdocs.log.save.11.11.2008.15.21.25
```

For more information about Content Server log files, see the *EMC Documentum Content Server Administration Guide.*

What's Next?

After you complete Content Server installation and configuration, you can use the Interactive DQL editor (IDQL) tool to test the installation. For information about IDQL and how to use it, see the *EMC Documentum Content Server Administration Guide*.

If you are using clustered servers, be sure to install the DFC on the PPM Servers on which Content Server is not installed. For instructions, see Chapter 5, *Installing Documentum Foundation Classes,* on page 119.

After you test the Content Server installation, and install the DFC on all PPM Servers on which Content Server is not installed, you can enable HP document management in PPM Center. For instructions, see Chapter 7, *Enabling HP Document Management,* on page 143.

4 Installing Content Server Fulltext Indexing Software

About this Chapter

The following sections provide basic information about installing and configuring fulltext indexing. HP strongly recommends that you review the *EMC Documentum Fulltext Indexing System Installation and Administration Guide* for complete details and recommendations.

Overview of Fulltext Indexing

Fulltext indexing enables the rapid searching and retrieval of text strings within content files and content file attributes. If you are using distributed content, all content is copied to the primary content store for indexing. The drive on which the primary content store resides must have sufficient space for the primary content store plus the content copied from remote stores for indexing.

During Content Server installation, you are prompted to designate the languages for which grammatical normalization is enabled. Grammatical normalization ensures that all forms of a word are indexed and that a search for one form of a word also returns other forms.

Fulltext indexing is enabled in the repository by default when the repository is created for this Content Server version. However, Content Server itself does not create or maintain the fulltext index. You must install the fulltext indexing software components, which create and maintain the index.

Fulltext indexes enable document management users to search for specific text in stored documents or document attributes.

The fulltext indexing software consists of:

- Content Server
- Index agent
- Index server

Content Server manages the objects in a repository, generates the events that trigger fulltext indexing operations, queries the fulltext indexes, and returns query results. For a complete description of the fulltext indexing process, the chapter "fulltext Indexing" in the *EMC Documentum Content Server Administration Guide.*

About the Indexing Process

The indexing process does not destroy existing content or attributes in a repository. Indexing is governed by queue items. During normal repository operations, queue items are generated by operations such as Save operations. When the index agent runs in migration mode, a single queue item, the *high-water mark,* governs indexing. For information about index agent modes and the high-water mark, see *Index Agent Modes* on page 103.

During indexing, the content files and attributes are read, but not modified. For a complete description of the indexing process, see the *EMC Documentum Fulltext Indexing System Installation and Administration Guide.*

Language Support

Fulltext indexing supports all standard Unicode character sets. No special configuration is necessary.

Table 4-1 lists the languages supported for fulltext indexing.

Table 4-1. Supported languages (page 1 of 2)

Language	Code	Language	Code	Language	Code
Afrikaans	af	Frisian	fy	Maori	mi
Albanian	sq	Galician	gl	Mongolian	mn
Arabic	ar	Georgian	ka	Norwegian_ Bokmaal	nb
Armenian	hy	German	de	Norwegian_ Nynorsk	nn
Azeri	az	Greek	el	Polish	pl
Bangla	bn	Greenlandic	kl	Portuguese	pt
Basque	eu	Hausa	ha	Rhaeto_ Romance	rm
Bosnian	bs	Hebrew	he	Romanian	ro
Breton	br	Hindi	hi	Russian	ru
Bulgarian	bg	Hungarian	hu	Sami_Northern	se
Byelorussian	by	Icelandic	is	Serbian	sr
Catalan	ca	Indonesian	id	Slovak	sk
Chinese_ simplified	zh_cn	Irish_Gaelic	ga	Slovenian	sl
Chinese_ traditional	zh_tw	Italian	it	Spanish	es
Croatian hr	hr	Japanese	na	Swahili	sw
Czech	cs	Kazahk	kk	Swedish	sv
Danish	da	Kirghiz	ky	Tamil	ta
Dutch	nl	Korean	ko	Thai	th
English	en	Kurdish	ku	Turkish	tr
Esperanto	eo	Latin	la	Ukrainian	uk
Estonian	et	Latvian	lv	Urdu	ur

Table 4-1. Supported languages (page 2 of 2)

Language	Code	Language	Code	Language	Code
Faeroese	fo	Letzeburgesch	lb	Uzbek	uz
Farsi	fa	Lithuanian	lt	Vietnamese	vi
Filipino (Tagalog)	tl	Macedonian	mk	Welsh	cy
Finnish	fi	Malay	ms	Yiddish	yi
French	fr	Maltese	mt	Zulu	zu

About the Indexing Software

Two software components, the *index agent* and the *index server,* underlie fulltext indexing operations. This section provides information about these components.

Index Agent

The index agent exports documents from a repository and prepares them for indexing. It is a Web application than runs in an instance of the Apache Tomcat servlet container. Tomcat is automatically installed during index agent installation. Each index agent runs in its own Tomcat instance.

A given index agent runs against only one repository. Typically, you install the index agent on the Content Server host, but you can install it on a different machine.

If you install the index agent on a machine other than the Content Server host, that machine must be running a supported operating system. For a list of the supported operating systems, see the *System Requirements and Compatibility Matrix.*

Index Agent Modes

The index agent runs in one of the following modes:

- **Migration mode.** The index agent prepares all indexable objects for indexing in object ID order. A single queue item, the high-water mark, records the ID of the most recent object indexed. The index agent reads the value in the queue item, exports the next batch of indexable objects from the repository, and updates the queue item. Content Server generates a queue item if an event such as a check-in or save requires that a new or modified object be indexed.
- **Normal mode.** The index agent reads the queue item, prepares the object for indexing, and updates the queue item. After the index agent successfully submits the object for indexing, it deletes the queue item from the repository. If the index agent does not successfully submit the object, the queue item remains in the repository and the error generated by the unsuccessful attempt to index the object is stored in the queue item.

An index agent running in normal mode and an index agent in migration mode cannot simultaneously update the same index.

Index Server

The index server creates fulltext indexes and responds to fulltext queries from Content Server. Depending on the configuration, a single index server instance can serve one or multiple repositories.

Because the index server operations are processor- and memory-intensive, HP recommends that you install the index server on a machine other than the Content Server host. You must install the index server on the same operating system that is running on the Content Server host.

Fulltext Indexing Components Configuration Options

Documentum supports the following configurations for the fulltext indexing components:

- **Single host.** Content Server, repository, index agent, and index server on same host

- **Separate host.** Content Server and repository on one host with the index agent and index server on a separate host

Each repository requires its own index agent. For example, if you have multiple repositories in a single Content Server installation, you must install a separate index agent for each repository. Regardless of where the indexing software resides, a single index server can serve multiple repositories.

Preparing to Install Fulltext Indexing

This section provides the steps you perform to prepare to install the fulltext indexing software for the first time.

To prepare for fulltext indexing software installation:

1. If you plan to install the indexing software on a machine other than the Content Server host, do the following to ensure that the DNS entries for the two machines are correct (so that they can locate each other on the network):

   a. On the index server machine, look up the Content Server host:

      `nslookup <FQDN_of_Content_Server_Host>`

      where `<FQDN_of_Content_Server_Host>` is the fully-qualified domain name of the Content Server host.

      This returns one or more IP addresses for the Content Server host.

   b. Use the first IP address returned in step 1 for a reverse lookup:
      `nslookup <IP_Address_Returned>`

      The correct return value is the FQDN you typed in step a on page 105.

   c. If the `nslookup` commands do not return the correct values, update the DNS servers used by the hosts to reflect the correct FQDNs.

   d. If necessary, on a Windows system with more than one network card, update the host files to ensure that the correct IP address for each host is listed first.

   e. If the `nslookup` commands succeeded and return the correct values, ping the index server host from the Content Server host to ensure it responds and to ensure that the IP address that responds to the ping is the IP address defined in the ftengine config object.

2. Disable any antivirus software running on the system.

   To install the index agent and index server, you must be logged on to the system as the same user who installed Content Server (the Content Server installation owner).

3. If you plan to install the index agent and index server on a machine other than the Content Server host, ensure that the Content Server installation owner user account exists on that machine.

4. If you plan to install the index agent and index server on a UNIX system, set the environment variables (listed in the following table) in the installation owner environment.

Environment Variable	Description	Required Values
DOCUMENTUM	The directory in which the indexing software is installed	Any directory in the installation owner's environment
DOCUMENTUM_SHARED	The directory in which DFC is installed	Any directory in the installation owner's environment

LD_LIBRARY_PATH, SHLIB_PATH, or LIBPATH	Index server library location	`$DOCUMENTUM/fulltext/IndexServer/lib`
		`$DOCUMENTUM/fulltext/fast40`
		`$DOCUMENTUM_SHARED/dfc`
		`$DOCUMENTUM_SHARED/IndexAgents/ftintegrity`

FASTSEARCH	Index server location	`$DOCUMENTUM/fulltext/IndexServer`
DISPLAY	Controls the display	`localhost:0.0`
LC_ALL		C
JAVA_HOME	Home directory for the Java installation on the host	Any directory in the installation owner environment

The index server installation includes a script that sets required environment variables for running the index server. The script is `setupenv.sh` or `setupenv.csh`, depending on the shell you use, and it is located in the `<Indexserver_Install_Directory>/bin` directory.

5. To ensure that the environment variables are set correctly, run the `setupenv.sh` or `setupenv.csh` script.
6. For performance reasons, HP recommends that you mount or share the drive or drives on which the repository file stores are located with the index server host (see *Sharing the Drives where Content Files Reside*).

Sharing the Drives where Content Files Reside

The index server requires access to the content files in a repository. If you install the index server on the Content Server host, then the index server has direct access to the file store storage areas.

Because the index server operations are processor- and memory-intensive, HP recommends that you install the index server on a machine other than the Content Server host. You must install the index server on the same operating system that is running on the Content Server host.

If the index server is not installed on the Content Server host, the default behavior of the index agent is to use the `Getfile` method to retrieve a temporary copy of a file, store it in a temporary location, and pass that location to the index server. After indexing the file, the index server deletes the temporary copy.

For performance reasons, HP recommends that you mount or share the drives where the repository file store storage areas reside with the index server host. When the drives are shared or mounted, the index agent uses the `Getpath` method to pass to the index server the direct path to a file that must be indexed.

Mount or share the drives before you install the indexing software. After you install the software, edit the `indexagent.xml` file to map the file stores for the index agent and use the index agent administrative interface to indicate that the file stores are mapped. For instructions on how to edit the `indexagent.xml` file, see *Modifying the indexagent.xml File to Map File Stores* on page 115.

You can share or mount the drives so that the content files are read-only. HP strongly recommends that you mount or share drives so that the paths are logically identical on the Content Server and index server hosts.

On Windows hosts, use UNC paths. On UNIX, use NFS and, if necessary, symbolic links. If you must mount from a Windows platform to a UNIX platform, use third-party utilities to mount or share the drives. The changes to the `indexagent.xml` file depend on whether the paths are logically identical. For instructions on how to share or mount drives, see the documentation for your operating system.

Even if the file store storage area drives are mounted, XML content is retrieved using the `Getfile` method rather than the `Getpath` method. Content located in Centera stores, external stores, or encrypted file stores must be retrieved for indexing using the `Getfile` method.

Installing the Fulltext Indexing Components

This section provides the steps you perform to install the fulltext indexing software, and then create a fulltext index. Use these instructions to install the index agent or the index server software. The same installation program is used for both components. You can install either or both of the components on a given host.

Note that the installer installs the index agent configuration program, which you use to configure an index agent instance. If you do not configure the index agent immediately after you install the configuration program, you can configure it later.

To install the index server and the index agent configuration program:

1. Ensure that the repository for which you are installing the index server and index agent is running.
2. Log in to the index server and index agent host as the Content Server installation owner.
3. Obtain the installation files and save them to a temporary location on the host.
4. Start the full text installer. The following table lists the executable file for the operating systems.

Operating System	Executable Filename
Windows	`Full-text_Indexing_Components_5.3_SP5_windows.exe`
HP-UX	`fulltextHpuxSuiteSetup.bin`
AIX	`fulltextAixSuiteSetup.bin`
Solaris	`fulltextSolSuiteSetup.bin`
Linux	`fulltextLinuxSuiteSetup.bin`

The Welcome page opens.

5. Click **Next.**

   The license agreement page opens.

6. Click **I accept the terms of the license agreement,** and then click **Next.**

   The installer program lists the programs you can install.

7. Leave **Documentum Index Agent Configuration Program** and **Documentum Index Server** selected and click **Next.**

8. (Windows only) Indicate whether to install the developer documentation and the primary interop assembly installer, and then click **Next.**

9. (UNIX only) On the Select Optional Features page leave the **Developer Documentation** check box cleared and click **Next.**

10. If required, install DFC.

    For Windows:

    a. Accept the default installation directory (`C:\Program Files\Documentum`) or specify a different directory.

    b. Accept the default user directory (`C:\Documentum`) or specify a different directory.

    On UNIX, the DFC directories are determined by environment variables set before installation.

11. Click **Next.**
12. If a `dmcl.ini` file does not exist on the machine, provide the following connection information:
    a. In the text field, type the host name of the computer on which a connection broker is running.
    b. In the text field, type the port number that the connection broker uses.
13. Click **Next.**
14. Install the index server, as follows:
    a. Accept the default index server installation directory or specify a new directory, and then click **Next.**
    b. If prompted, type the password for the account you used to log in, and then click **Next.**

       The installer verifies the password.
    c. Type the base port number for the index server, and then click **Next.**

       The index server requires 4,000 available ports in sequence; for example, if the base port you designate is 3000, the index server uses ports 3000 through 7000. The default base port is 13000.
    d. To enable support for grammatical normalization and parts of speech to be indexed, select the check box.

       Specifying the parts of speech to index can reduce the size of the indexes and the disk space required to maintain them. You can enable grammatical normalization only for the languages listed.

       If you enable grammatical normalization, it is enabled by default for Japanese and Korean and cannot be disabled. Content files in languages that you do not select or that are unavailable for normalization are still indexed. For more information about this setting, search for "grammatical normalization" in the EMC Documentum *Content Server Fulltext Indexing System Installation and Administration Guide.*

e. Choose languages for grammatical normalization and the parts of speech to be indexed.

f. Accept the default directory `(%DOCUMENTUM%)` for the fulltext indexes or specify a different directory, and then click **Next.**

   If you specify a different directory, ensure that its name contains no spaces. The installer creates the `\data\fulltext` directory in the location you specify.

   The installer program displays a list of the products to be installed.

15. Click **Next.**

    The installation program displays a progress bar so that you can follow the progress of the software installation.

16. Click **Finish.**

17. After you install the fulltext indexing software, ensure that the index server starts, as follows.

    - (Windows only) Select **Yes, restart my computer,** and then click **Next.**
    - (UNIX only) Navigate to the `$DOCUMENTUM/fulltext/IndexServer/bin` directory, type `startup.sh,` and then press **`Enter.`**

The index server starts.

Configuring the Index Agent

The index agent configuration program configures the index agent to process documents for a particular repository and to pass the documents to the correct index server instance for indexing. Use these instructions to run the index agent configuration program.

To configure the index agent:

1. To start the configuration program, after the host reboots and you log in as the installation owner.
   - (Windows only) Select **Start > Programs > Documentum > Index Agent Configuration Program.**
   - (UNIX only) Navigate to `$DOCUMENTUM_SHARED/IndexAgents` and start the configuration program for your operating system, as follows:
     - For AIX, use `IndexAgent_Configuration_Program.aix`
     - For Solaris, use `IndexAgent_Configuration_Program.bin`
     - For HP-UX, use `IndexAgent_Configuration_Program.hp`
     - For Linux, use `IndexAgent_Configuration_Program.linux`

   The Welcome page opens.
2. Click **Next.**
3. (Windows only) Type the installation owner password, and then click **Next.**
4. Leave **Create & Configure Index Agent** selected and click **Next.**
5. On the Select Index Agent Ports page:
   a. In the top **Port Number** field, accept the default value specified for Apache Tomcat (9082), or type a different port number for the index agent to use to communicate with Tomcat.

      (Windows only) The default ports for the first index agent on the host are 9081 and 9008.

b. In the bottom **Port Number** field, accept the default value specified for the index agent (9009), or type a different port number for the index agent to use to stop Tomcat.

If the index agent is on the Content Server host, do not specify port numbers used by the Java method server or Site Caching Services.

Type the port numbers for the index agent to use to communicate with, and to stop, Tomcat.The index agent runs in the Apache Tomcat servlet container. You must designate two ports for the index agent and Tomcat to use.

6. Click **Next.**
7. In the **Repository Name** list, select the repository for which the index agent is to prepare documents.

   The list displays the repositories that project to the connection brokers listed in the `dmcl.ini` file on the host. The `dmcl.ini` file was created during installation if a `dmcl.ini` file was not already on the host.
8. Click **Next.**
9. Type the user name and password for the Superuser account for the index agent to use to connect to the repository.

   Use this user name and password later to access the Index Agent Admin Tool.

The machine where the index server and index agent are installed must be identified using a fully-qualified domain name. For example, you could use a host name such as `isolde.documentum.com`, but not an IP address such as `172.04.8.275`.

   The index agent configuration program validates the user name and password you typed.
10. Click **Next.**
11. Select the **Normal Mode** for running the index agent.
12. Click **Next.**

13. On the Enter Index Server Details page, type the name of the machine where the index server for this index agent is running and the base port number for the index server.

    a. In the **Index Server Host Name** field, type the name of the host on which the index server for this index agent is running.

    b. In the **Index Server Base Port Number** field, accept the default value or type a different base port number for the index server.

    The index server requires a contiguous range of four thousand free ports. The default range is from 13000 to 17000.

14. Click **Next.**

    A summary dialog box opens.

15. Review the configuration settings, and then click **Next.**

    - (UNIX only) To start the index agent and its Tomcat instance, navigate to `<DOCUMENTUM_SHARED>/IndexAgents/<IndexAgentN>/`, where `<IndexAgentN>` is the number corresponding to the new index agent instance, and then type **`startupIndexAgent.sh.`**
    - (Windows only) The index agent is created and Tomcat is started.

16. Click Finish.

Modifying the indexagent.xml File to Map File Stores

If you have shared or mounted the drives that contain the repository file stores and installed the indexing software, you must manually edit the index agent configuration file to indicate that the drives are shared. The changes depend on whether the file system paths to the content are identical on the Content Server host and index server host.

To modify the `indexagent.xml` file and map the file stores:

1. On the index agent host, navigate to the following directory:

   ```
   $DOCUMENTUM_SHARED/IndexAgents/IndexAgent1/webapps/
   IndexAgent1/WEB-INF/classes/
   ```

2. Open the `indexagent.xml` file in a text editor.

3. If the paths to the content files are identical on the Content Server host and index server host, locate the `<exporter>` element and change the value of the `<all_filestores_local>` element to true, as follows:

   ```
   <all_filestores_local>true</all_filestores_local>
   ```

4. If the paths to the content files are different, create a file store map within the `<exporter>` element.

   Do not modify the value of `<all_filestores_local>`. For example, if Content Server is on a host called Dandelion where `filestore_01` is physically located in the directory `/Dandelion/Documentum/data/repository_name/content_storage_01` and the index agent and index server are on a host from which the drive on the Content Server host is shared as `/mappingtoDandelion/repository_name/content_storage_01`, create an alias as follows:

   ```
   <local_filestore_map>
      <local_filestore>
         <store_name>filestore_01</store_name>
         <local_mount>/mappingtoDandelion/<Repository>
         /content_storage_01</local_mount>
      </local_filestore>
   <!-- and so on for each filestore --!>
   </local_filestore_map>
   ```

If you are indexing content stored on an NAS device or a Windows 2003 Server host, you may view the following error message in the message attribute of the `dmi_queue_item`:

```
DocumentRetriever :ERROR Retrieval error: Couldn't open file
<file path/name> ERROR Processor error status:
DataNotAvailable Not read permission
```

To resolve this error, edit the `<local_mount>` element or elements in the `IndexAgent.xml` file that reference the storage area or areas on the NAS device. Add two backslashes immediately after the opening `<local_mount>` element. For example, assume the following references a storage are on an NAS device:

```
<local_mount>\\100.2.4.32\share3\c\data_for_example\content_
storage_1</local_mount>
```

After editing, it is as follows:

```
<local_mount>\\\\100.2.4.32\share3\c\data_for_example\
content_storage_1</local_mount>
```

5. Save the `indexagent.xml` file.
6. Start a browser and open the Index Agent Admin Tool at the following URL:

   `<Host_Name>:<Port_Number>/<IndexAgentN>/login.jsp`

   where `<Host_Name>` is the name of the host where the index agent is running, `<Port_Number>` is the port where the index agent is listening, and `<IndexAgentN>` is the number assigned to the index agent instance. If the browser is on the index agent host, replace hostname with localhost.
7. Stop the index agent.
8. Indicate which file stores are mapped.
9. Restart the index agent.

   For information on how to stop and start the index agent, see *Starting and Stopping the Index Agent* on page 117.

Starting and Stopping the Index Agent

If the index agent is running in migration mode, use the Index Agent Admin Tool to start or stop it.

Note that stopping the index agent does not stop or start the Tomcat process in which the index agent runs.

To start or stop the index agent running in migration mode:

1. Start a browser and navigate to the following URL:

   `<Host_Name>:<Port_Number>/<IndexAgentN>/login.jsp`

   where `<Host_Name>` is the name of the host where the index agent is running, `<Port_Number>` is the port where the index agent is listening, and `<IndexAgentN>` is the number assigned to the index agent instance. If the browser is on the index agent host, replace `<Host_Name>` with `<Local_Host>`.

2. Log in to the Index Agent Admin Tool.
3. To start the index agent, in the index agent status line, click **Start.**
4. To stop the index agent, in the index agent status line, click **Stop.**

Administering Fulltext Indexing

To administer fulltext indexing, you use the Index Agent Admin Tool. You can use this tool to map file stores, monitor indexing, and stop or start the index agent and index server on a host.

The Index Agent Admin Tool is installed as part of the index agent and index server installation. It is a JSP page, that you can access by going to the following URL:

`<Host_Name>:<Port_Number>/<IndexAgentN>/login.jsp`

where `<Host_Name>` is the name of the machine on which the index agent is running, `<Port_Number>` is the port that the index agent uses to listen, and `<IndexAgentN>` is a number that designates an index agent instance.

5 Installing Documentum Foundation Classes

About EMC Documentum Foundation Classes

The Documentum Foundation Classes are automatically installed with Content Server. If you install Content Server on the same machine as the PPM Server, there is no need to perform a separate DFC installation. However, if Content Server and the PPM Server are on separate machines, you must install DFC on the PPM Server. This chapter provides the information you need to prepare to install DFC, and then to install it.

If you need to install DFC on PPM Server machines that are *not* Content Server hosts, HP recommends that you do so *before* you install or upgrade to PPM Center version 9.10.

Installation Requirements

Requirements for installing DFC are as follows:

- Video capability of at least 256 colors
- Screen resolution of at least 800 by 600
- On Linux systems, also make sure that:
  - `/usr/dt/bin` and `/usr/openwin/bin` are on the PATH variable
  - The DISPLAY environment variable is set to `localhost:0.0`.

Because the installation program provides a graphical interface, you cannot use a telnet session to install DFC. Install from the system console, or use an X server to perform the installation remotely. However, be careful if you install remotely with a DISPLAY setting to localhost:0.0, because the output is sent to that terminal rather than the one at which you are working.

Before You Install DFC

This section describes the steps to take before you install the DFC.

DFC runs on a Java virtual machine (JVM) on the machine from which you call it. For information on the supported versions of the JVM, see the release notes for EMC Documentum Content Server. Supported versions can change from one minor release to the next. Using the DFC with an application server may further restrict the supported versions.

Setting the Environment Variables for the DFC

The DFC uses several environment variables to find its components. On a Windows system, the DFC installation program sets the values for these variables with your input. On a UNIX system, you must set these variables manually before you start the DFC installation. If the installation program does not find the required environment variables, the installation fails.

Table 5-1 lists the environment variables to set on a UNIX system. Use the `setenv` script to set these variables. You can find the script in the `$DOCUMENTUM_SHARED/dfc/set_dctm_env.sh (.csh)`.

Table 5-1. Environment variables to set for DFC on UNIX systems

Environment Variable	Function	Value
DOCUMENTUM _ SHARED	Specifies the full path to the program root directory, which is where the DFC program files are installed.	Default: `C:\Program Files\Documentum`
On Solaris or Linux systems: LD_LIBRARY_ PATH	Specifies the location for the DFC shared libraries.	The `dfc` subdirectory of the program root directory Add `$DOCUMENTUM_ SHARED/dfc`
On HP-UX systems: SHLIB_PATH	Specifies the location for the DFC shared libraries.	The `dfc` subdirectory of the program root directory
On AIX systems: LIBPATH	Specifies the location for the DFC shared libraries.	The `dfc` subdirectory of the program root directory
DOCUMENTUM	Specifies the full path to the user root directory, where DFC creates client-oriented directories.	Default: `C:\Documentum`
CLASSPATH	Allows Java runtime find the `dctm.jar` file and the DFC `config` directory.	Add `$DOCUMENTUM_ SHARED/dctm.jar` and `$DOCUMENTUM/config` to the class path

To set environment variables on UNIX systems, you can use the `setenv` script, which is located in the `$DOCUMENTUM_SHARED/dfc/set_dctm_env.sh (.csh)` directory.

Table 5-2 lists the environment variables set for DFC on a Windows system.

Table 5-2. Environment variables to set for DFC on Windows systems

Environment Variable	Function	Value
PATH	Specifies DFC shared libraries (DLLs) on Windows.	Full path (followed by a separator character) is placed in front of the shared subdirectory of the Content Server program root.
CLASSPATH	Allows Java runtime find the `dctm.jar` file and the DFC `config` directory.	Full paths (with separator characters) of the `dctm.jar` file and the `config` directory. Examples: • `C:\Program Files\ Documentum\ Shared\ dctm.jar` • `C:\Documentum\ config)`

File System Locations for the DFC Components

DFC maintain components in different file system locations, which are described in the following sections.

DFC Program Root Directory

The DFC installs program files under the program root directory. On Windows, the installation program asks for a program root directory and uses the `C:\Program Files\Documentum` directory if you do not specify a location. On UNIX systems, the installation program uses the environment variable `DOCUMENTUM_SHARED` to determine the program root directory. If this variable is not defined, the installation fails.

DFC User Root Directory

The DFC creates client-oriented directories (for example, `checkout` and `export`) in the user root directory. On Windows systems, the installation program asks for a user directory root and uses `C:\Documentum` if you do not specify a location.

On UNIX systems, the installation program uses the `DOCUMENTUM` environment variable to determine the user directory root. If this variable is not defined, the installation fails.

Directory for Shared Libraries

The DFC installation program places shared libraries at specific locations relative to the program root directory. On Windows systems, the installation program uses the shared subdirectory of the program root directory. It adds the full path of this directory (followed by a separator character) to the value of the `PATH` system environment variable.

On UNIX systems, the installation program uses the `dfc` subdirectory of the program root directory. You must place the full path of this directory onto the library path. *Table 5-1* lists the library path environment variable names for the different UNIX-based operating systems.

Directory for the DFC Configuration Files

The installation program creates the config directory to store configuration files. The installation program creates the directory under the program root directory on UNIX systems, and under the user root directory on Windows systems. For the DFC to operate successfully, the classpath must contain the full path to the config directory.

On Windows systems, the installation program adds the full path of the config directory (followed by a separator character) to the value of the CLASSPATH system environment variable.

On UNIX systems, you must place the full path of the config directory onto the classpath. For example, in the syntax of the csh shell, add $DOCUMENTUM_SHARED\config: to the front of the values defined for the CLASSPATH environment variable. Because the installation program does not use this setting, you can do this before or after you run the installation program.

The DFC_DATA environment variable has been deprecated. To specify a directory to contain the config directory, use the dfc.data.dir property in the dfc.properties file. (If the DFC installation program finds DFC_DATA set to the full path of a directory, it uses the config subdirectory of that directory as the location of configuration files.

Locations of the DFC Classes

The Java runtime environment uses the CLASSPATH environment variable to find the DFC and the config directory. On a Windows system, the installation program places the full paths to dctm.jar and the config directory (with separators) at the front of the classpath. On a UNIX system, the installation program does not modify the classpath. You must place the full paths of dctm.jar file and the config directory on the CLASSPATH variable.

Installing the DFC

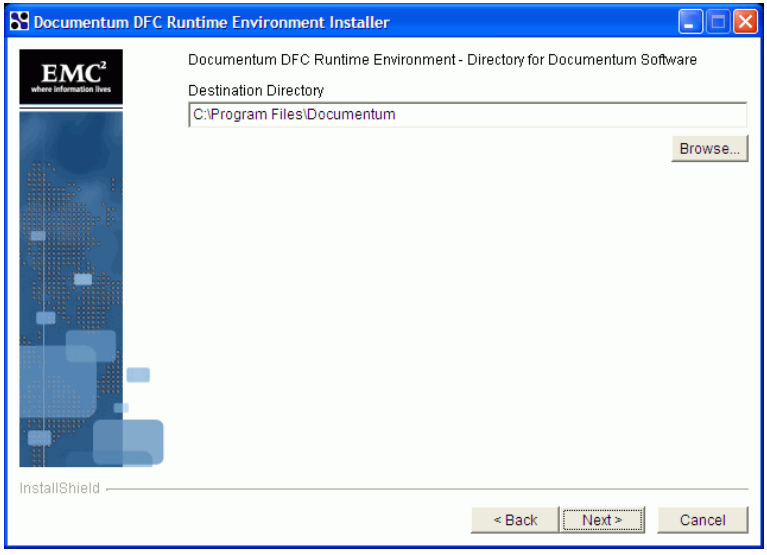
This section contains instructions on how to install the DFC using the graphical interface of the installation program.

Installing DFC on Windows Systems

To install DFC on a Windows system:

1. Log on to the machine that is hosting the PPM Server as a user with administrator privileges.
2. Run `dfcWinSuiteSetup.exe`.

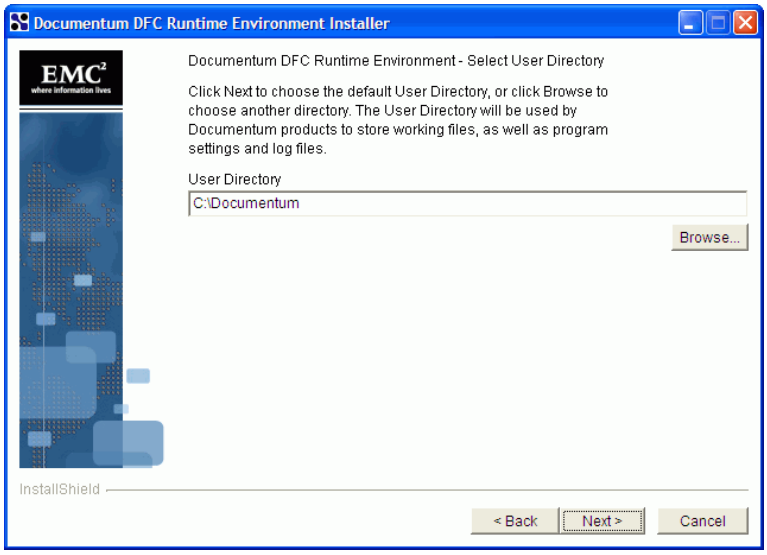
   The Documentum DFC Runtime Environment Installer wizard opens to the welcome page, which lists the products available for installation.
3. Click **Next.**
4. Read the license agreement, select **I accept the terms of the license agreement,** and then click **Next.**



5. Accept the default installation directory displayed in the **Destination Directory** field (`C:\Program Files\Documentum`), or use the **Browse** button to locate and select a different directory.

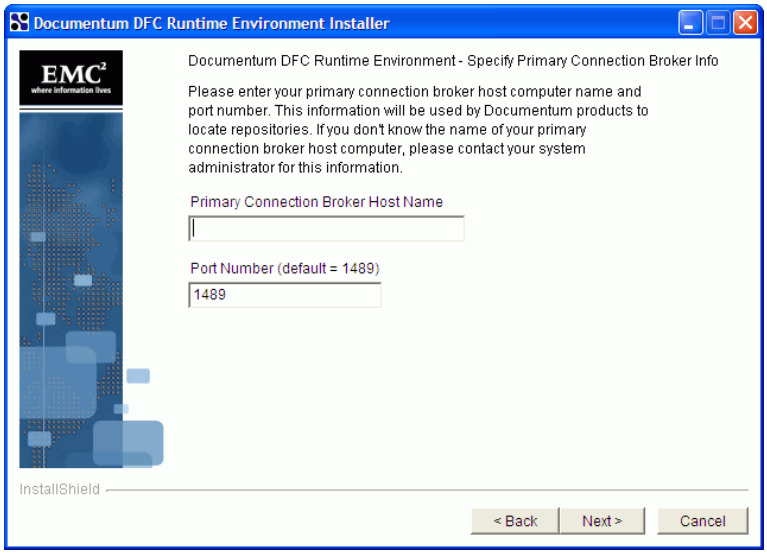
6. Click **Next.**

7. The installer lets you select optional features to install. Leave the check boxes cleared and click **Next.**



8. Accept the default shown in the **User Directory** field (`C:\Documentum`), or specify a different directory to contain working files, program settings, and log files.

9. Click **Next.**



10. On the next step, provide the location and port number of the connection broker created during Content Server installation, as follows:

    a. In the **Primary Connection Broker Host Name** field, type the name of the Content Server host machine.

    You can use an IP address or a symbolic address such as `MyHost.MyCompany.com`.

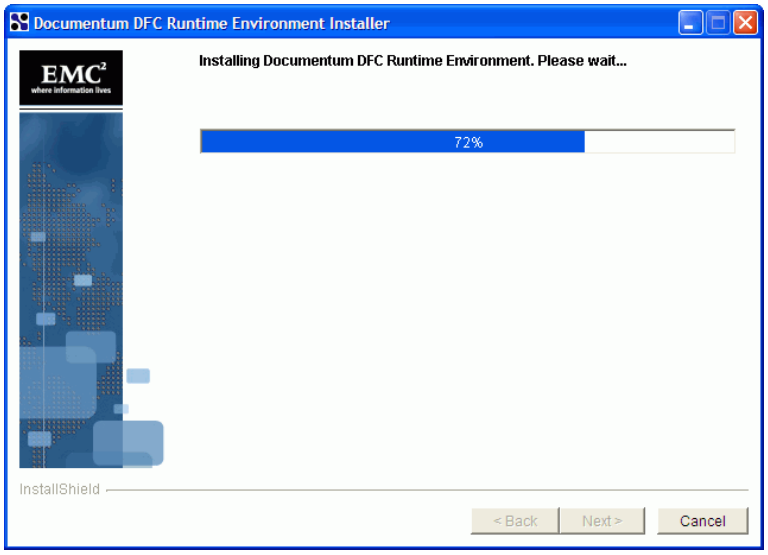
    b. Accept the default port number (1489) displayed in the **Port Number** field, or type a different port number for the Content Server host machine.

The DFC installer skips this step if it finds a `dmcl.ini` file that contains the required information.

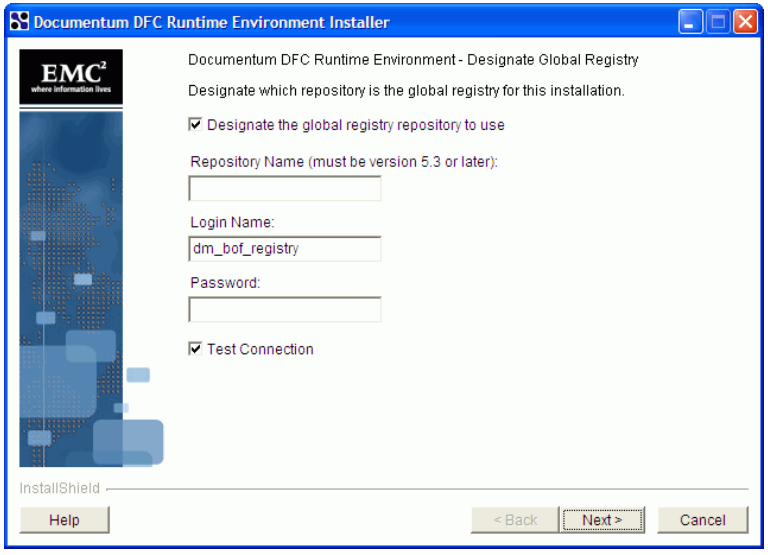
11. Click **Next.**

    The installer lists the DFC components to be installed and the installation directory for each component.

12. Click **Next.**

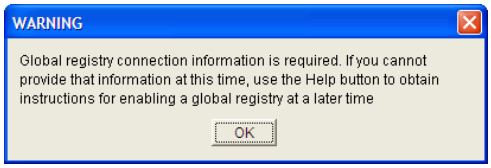


DFC installation starts.



13. The installer prompts for information about the global registry for this DFC instance to use. Clear the **Designate the global registry to use** check box.

The installer displays a warning to advise that global registry information is required, and that you can enable it later.



14. Close the message box, and then click **Next.**
15. After the DFC installation is complete, click **Finish** to exit the installer.

Check the DMCL Shared Library Location

Make sure that the version of the DMCL shared library you just installed is the one that the DFC always uses. The shared library has the filename `dmcl40` or `libdmcl40`. The filename extension varies with the operating system. To determine where the installation program placed the shared library, see *Directory for Shared Libraries* on page 123.

Installing DFC on UNIX Systems

To install DFC on a UNIX system:

1. Log on to the machine that is hosting the PPM Server as a user with administrator privileges.
2. Run the installation program. The following table lists the program file to run, based on your UNIX operating system.

UNIX Operating System	Program File Name
Solaris	`dfcSolSuiteSetup.bin`
Linux	`dfcLinuxSuiteSetup.bin`
AIX	`dfcAixSuiteSetup.bin`
HP-UX (32 bit)	`dfcHpux11SuiteSetup.bin`
HP-UX (64 bit)	`dfcHpuxia64SuiteSetup.bin`

The Welcome window opens.

3. Click **Next.**
4. Read the license agreement, select **I accept the terms of the license agreement,** and then click **Next.**
5. The installer lets you select optional features to install. Leave the check boxes cleared and click **Next.**
6. On the next step, provide the location and port number of the connection broker created during Content Server installation, as follows:
   a. In the **Primary Connection Broker Host Name** field, type the name of the Content Server host machine.

      You can use an IP address or a symbolic address such as `MyHostMyCompany.com`.

   b. Accept the default port number (1489) displayed in the **Port Number** field, or type a different port number for the Content Server host machine.

The DFC installer skips this step if it finds a `dmcl.ini` file that contains the required information.

7. Click **Next.**

   The installer lists the DFC components to be installed and the installation directory for each component.
8. Click **Next.**
9. The installer prompts for information about the global registry for this DFC instance to use. Clear the **Designate the global registry to use** check box.

   The installer displays a warning to advise that global registry information is required, and that you can enable it later.
10. Close the message box, and then click **Next.**
11. After the DFC installation is complete, click **Finish** to exit the installer.

Troubleshooting the DFC Installation

The DFC installation program maintains an error log, which it writes to a file named `setupError.log` in the working directory. If it cannot write to the working directory, it writes to the home directory of the user who ran the installation. If installation fails, this file can help you determine the cause. If it does not, and you must call HP Software Support, supply your support contact with the entire log file, unedited. The `setupError.log` file does not contain passwords or other secure information.

6 Upgrading HP Document Management

Overview of Upgrading Document Management

This chapter provides information about how to upgrade the HP document management module and how migrated attachments are organized in an upgraded Content Server repository. It also includes information about the Document Cleanup Service, which you can use after you upgrade to rid the system of files that are no longer attached to PPM Center entities.

HP Document Management Upgrades Paths

You upgrade HP document management in one of the following ways:

- Upgrade from the embedded Content Server 5.3 SP2 software to the embedded Content Server EE version 6.5 SP1 software that HP supplies.
- Transition from HP document management based on Content Server 5.3 SP2 to document management based on integration with a Documentum Content Server EE version 6.5 instance that your organization has already installed.

If embedded Content Server 5.2 software is installed on your system, contact HP Software Support Web site (hp.com/go/hpsoftwaresupport) for assistance with upgrading.

Upgrade Considerations

Before you begin to upgrade document management, keep the following points in mind:

- PPM Center users can only view attachments and references if you remain on Documentum 5.3 after you upgrade to PPM Center 9.10. While PPM Center is connected to Content Server in read-only mode, document management users cannot:
  - Check files in or out, or undo a file check-out
  - Attach documents to PPM Center entities
  - Delete files
  - Create new user accounts
- If you have Apache Tomcat or another application server on the Content Server host as a Java method server, stop the application server before you begin the upgrade. On Windows, make sure that the application server does not start automatically after a host restart.
- A Content Server upgrade involves upgrading the server and repository. After you upgrade, you cannot revert to previous versions of the server.
- The amount of time required to upgrade a repository depends on the size of the repository and can be substantial. Allow enough time for backing up the repository and performing the upgrade.

Upgrading Content Server Embedded Software

This section describes the instructions for upgrading the HP document management solution (upgrading from embedded Content Server software from 5.3 SP2 to the version 6.5 SP1) after you upgrade to PPM Center version 9.10.

For information on how to upgrade to PPM Center version 9.10, see the *Upgrade Guide*.

To upgrade the HP document management embedded software:

1. Stop the PPM Server.

   For instructions on how to stop the PPM Server, see the *Installation and Administration Guide*.

2. Back up your existing Content Server repository.
3. Disable all jobs in the repository on the host.
4. Shut down the repositories and connection brokers.
5. If you have Apache Tomcat or another application server on the Content Server host as a Java method server, stop the application server before you begin the upgrade. On Windows, make sure that the application server does not start automatically after a host restart.
6. Locate and run one of the following based on your operating system.

Operating System	Content Server Installer
Windows	ContentServer_<*Operating_System*>.exe
UNIX	ContentServer_<*Operating_System*>.bin

   The Content Server installer program starts.

7. Provide the required information when you are prompted to do so.

8. The installer detects your earlier installation of Content Server, and gives you a chance to cancel if you first need to stop all repositories and connection brokers (see step 4).
9. After the wizard lists the components to be upgraded, click **Next.**

   The program upgrades Content Server.
10. On the Server Configuration Program - Select Configuration Type step, select **Custom Configuration,** and then click **Next.**
11. On the Server Configuration Program - Select Connection Broker Action step, select **Upgrade an existing connection broker,** and then click **Next.**
12. When the installer prompts you to confirm that you want to upgrade the existing connection broker, click **OK.**
13. On the Server Configuration Program - Select Repository Action step, select **Upgrade an existing repository,** and then click **Next.**
14. When the installer prompts you to confirm that you want to upgrade the existing repository, click **OK.**
15. After you finish configuring Content Server, run the PPM Center server configuration utility (`kConfig.sh` script).

For instructions on how to run the PPM Center server configuration utility, see Chapter 7, *Enabling HP Document Management,* on page 143.

16. Restart the PPM Server.
17. Test the upgraded system.

Upgrading from Document Management Using Embedded Content Server Software to Using a Stand-Alone Deployment of EMC Documentum Content Server

To switch from PPM Center version 7.5 with document management enabled to PPM Center version 9.10 integrated with a stand-alone deployment of Documentum Content Server Enterprise Edition:

1. Purchase and download the HP PPM Center Documentum Connector software from the HP PPM Center download site.
2. Stop the PPM Server on your version 7.5 system.

For information about how to stop and start the PPM Server, see the PPM Center *Installation and Administration Guide*.

3. To install the `ppmdocumentum.jar` file, run `kDeploy.sh` (located in the `<PPM_Home>/bin` directory).
4. To deploy the HP PPM Center Documentum Connector software, pace the `ppmdocumentum.jar` file into the following directory:

   `<PPM_Server_Name>\server\<PPM_Server_Name>\deploy\itg.war\WEB-INF\lib`

5. Obtain the data migration tool (dump and load) from HP Software Support.
6. Do the following. (You can perform these tasks at the same time.)
   - Upgrade to PPM Center 9.10. (For instructions, see the *Upgrade Guide*.
   - Use the data migration tool (using the instructions provided with the tool) to migrate data from the old Content Center repository to the repository on your stand-alone instance.
7. To integrate PPM Center with your stand-alone Content Server instance, run the PPM Center server configuration utility (`kConfig.sh` script).

For instructions on how to run the PPM Center server configuration utility, see Chapter 7, *Enabling HP Document Management,* on page 143.

8. Restart the PPM Server.
9. Test the upgraded system.

Folder Structure for Migrated Attachments

This section addresses how the files you attach to PPM Center entities are organized in Documentum Content Server (embedded or stand-alone instance) after you enable document management.

Figure 6-1 and *Figure 6-2* show the folder organization in a Content Server repository after PPM Center is configured with Content Server (displayed in EMC RepoInt).

Figure 6-1. PPM Center attachment file folders in the Content Center repository

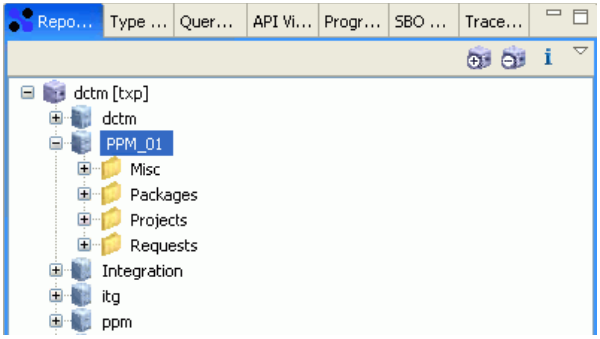
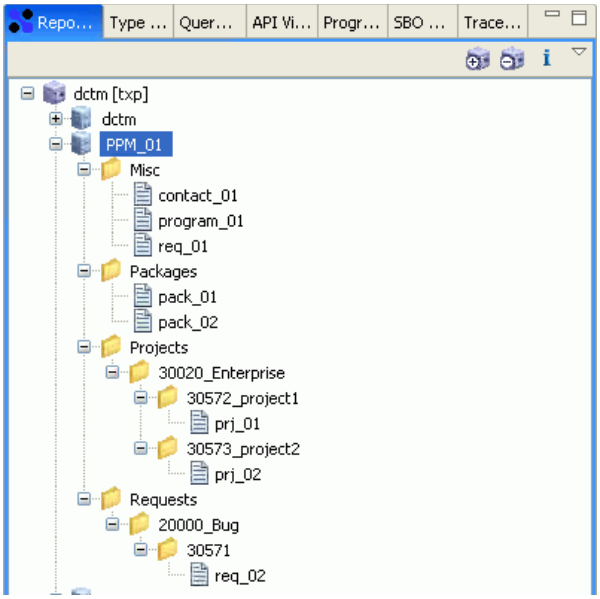


Figure 6-2. Expanded attachment folders in the Content Server repository



In the example shown in *Figure 6-1* and *Figure 6-2*, “PPM_01” is the name of the cabinet used to store PPM Center attachments. The Content Server repository name is the name you provided when you ran the server configuration tool to integrate PPM Center with the Content Server (see step 12 on page 150).

During the integration with Content Server, the configuration utility creates the following folders within the cabinet:

- **Packages.** Files attached to packages through user data fields or as references are stored in this folder.
- **Projects.** Files attached to projects through user data fields or as references are stored in this folder. The first time a user attaches a document to a project of a given type, a subfolder is created for that project type in the **Projects** folder.

  Each time a user attaches a document to a project of a given type, a subfolder is created for that individual project in the folder for that project type. The subfolder name format is `<Project_ID>_<Project_Name>`. For example, it might be named “30030_test project A.” The attachments are stored in the folders for the individual projects.

- **Requests.** Files attached to requests through user data fields or as references are stored in this folder. The first time a user attaches a document to a request of given type, a subfolder is created for that request type in the **Requests** folder. The subfolder name format is `<Request_ID>`.

  Each time a user attaches a document to a request of a given type, a subfolder is created for that request in the folder for the request type. The subfolder name format is `<Request_ID>`. The attachments are stored in the folders for the individual requests.

- **Misc.** Attachments associated with entities other than packages, projects, and requests, such as contacts and programs, are stored in this folder. "Orphaned" documents are also stored in this folder.

For information on orphaned documents and how to manage them, see *Document Cleanup Service* on page 141.

Document Cleanup Service

The PPM Center file system may contain “orphan” files. These are files that are no longer associated with the entities to which they were originally attached. Orphans are create if:

- A user deletes an entity to which a document was attached.
- A user aborts the creation of an entity (request, budget, staffing profile, and so on) after attaching a document to the entity.

You can use the Document Cleanup Service to delete these orphan files. To do this, you first enable, and then schedule this background service.

Enabling and Scheduling the Document Cleanup Service

To enable and schedule the Document Cleanup Service:

1. Log on to PPM Center.
2. On the **Open** menu, click **Administration > Schedule Services.**

   The Schedule Services page lists all of the available services, and shows the typical load each service manages, whether the service is enabled, the type of expression used to schedule the service, and the current run schedule.
3. In the **Schedule Services** table, click the **Document Cleanup Service** row.

   Items in this row becomes editable.
4. From the list in the **Status** column, select **Enabled.**

5. To select a schedule type, do one of the following:

   - To use a simple expression such as hours, minutes, or seconds to schedule the service, in the **Schedule Type** list, leave **Simple** selected.
   - To use a cron expression to schedule the service, from the **Schedule Type** list, select **Cron.**

   For detailed help with scheduling the service, next to the **Schedule Type** list heading, click the help icon after the **Schedule Type** column heading.

6. In the **Schedule** column, provide the simple or cron value to specify the Document Cleanup Service run interval.
7. In the top right corner of the page, click **Save.**

Viewing Service Status

To view the current settings for the Document Cleanup service (or any other background service):

1. Log on to PPM Center.
2. On the **Open** menu, click **Administration > View Services Audit Page.**

   The Services Audit Results page opens. This page shows whether a service is enabled, running, when it was last run, when the next run is to occur, and the scheduled run interval.

3. To make changes to the settings for a service, at the top right corner of the page, click **Done.**

   The Service Audit Results page opens so that you can make and save necessary changes to service settings.

7 Enabling HP Document Management

This chapter contains information on how to integrate PPM Center with EMC Content Server EE. It also provides information about how PPM Center files and folders are organized within a Content Server repository, as well as instructions on how to set up security for those files and folders.

Enabling Document Management

This section provides the procedure you use to configure PPM Center to work with Documentum Content Server on Windows or on UNIX systems. Enabling document management involves configuring the PPM Server so that it has access to the Documentum Content Server repository.

Before You Enable HP Document Management

Before you enable document management, keep in mind that, after you do, you cannot disable it and revert to storing attachments in the PPM Center file system if you have done both of the following:

- Added new attachments from the PPM Center standard interface

  and

- Acted on (checked in or out, edited, and so on) any of the files.

If you *have not performed any actions on migrated files,* or if you have a new PPM Center instance that does not yet have any attached documents, you can disable document management and revert to storing attachments on the PPM Center file system.

The document migration that occurs when you enable document management does not remove the files on the local file system.

If you are integrating PPM Center with a stand-alone installation on EMC Documentum Content Center EE 6.5, make sure that you read *Preparing to Integrate PPM Center with a Stand-Alone Instance of EMC Documentum Enterprise Edition* on page 81 before you continue.

For information on how to disable document management (after you have enabled it) in PPM Center, see *Disabling Document Management* on page 154.

Configuring Document Management in PPM Center

This section provides the procedure to enable document management on a single PPM Server. For information about how to enable document management on multiple nodes in a server cluster, see *Enabling Document Management in a Clustered Server Environment* on page 152.

To configure PPM Center to work with the document management module:

1. Make the DFC native libraries available to the PPM Server by setting the shared library path environment variable on the PPM Center host.

   The shared library path varies with the operating environment, as follows:

   - On Microsoft Windows, use `%PATH`.
   - On UNIX, use one of the variable names listed in the following table, based on your specific UNIX operating system.

UNIX Operating System	Shared Library Path Variable Name
Solaris or Linux	LD_LIBRARY_PATH
HP-UX	SHLIB_PATH
AIX	LIBPATH

   The shared library path must include the location of the native libraries (the `*.dll` files on Windows and the UNIX native files on UNIX) installed with the DFC. The location of the native library depends on the operating environment, as follows:

   - On Windows systems, the location is `%DOCUMENTUM%/shared`, where `%DOCUMENTUM%` is the Content Server installation directory.
   - On UNIX systems, the location is `$Documentum/shared/dfc`, where `$Documentum` is the Content Server installation directory.

2. Copy the `dfc.properties` file, which is located in the shared directory under the Content Server installation directory, to the `<`*`PPM_Home`*`>/<Server_Name>/conf` directory.

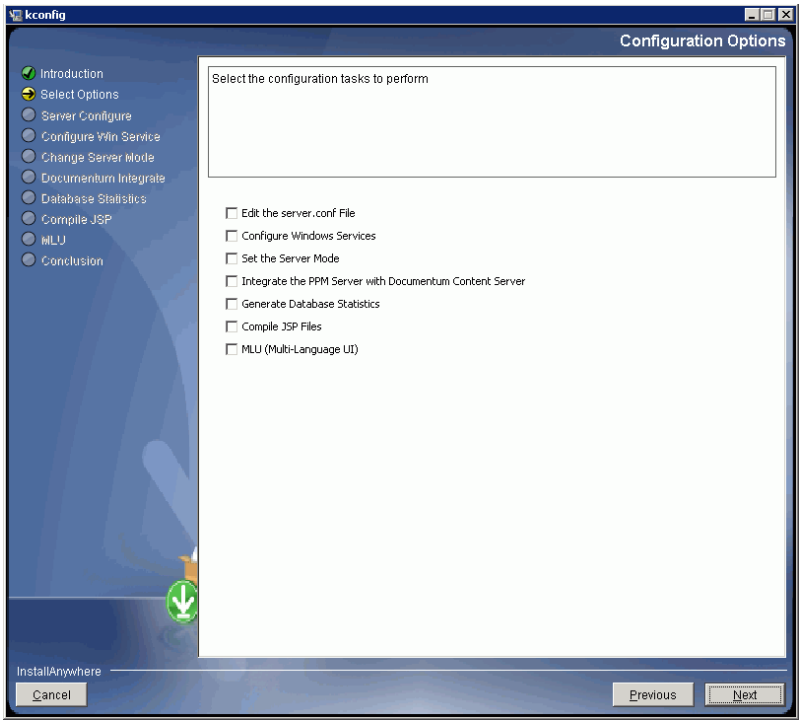
3. Run the `<PPM_Home>/bin/kStop.sh` script to stop the PPM Server, or, on Windows, stop the server from Windows Services.
4. Set your display options so that the configuration tool can run in graphic (swing) mode.

Before you perform the next step, make sure that the account under which you are to run `kConfig.sh` has read, write, and execute permissions to the directories for PPM Center and for Content Server.

5. Navigate to the `<PPM_Home>/bin/` directory
6. To start the configuration utility, run `sh ./kConfig.sh`.

   The HP Project and Portfolio Management Center configuration utility starts.
7. From the language list at the bottom of the window, select the language for the utility to use during the configuration process.

The next step lists all of the tasks that you can perform with the configuration tool.

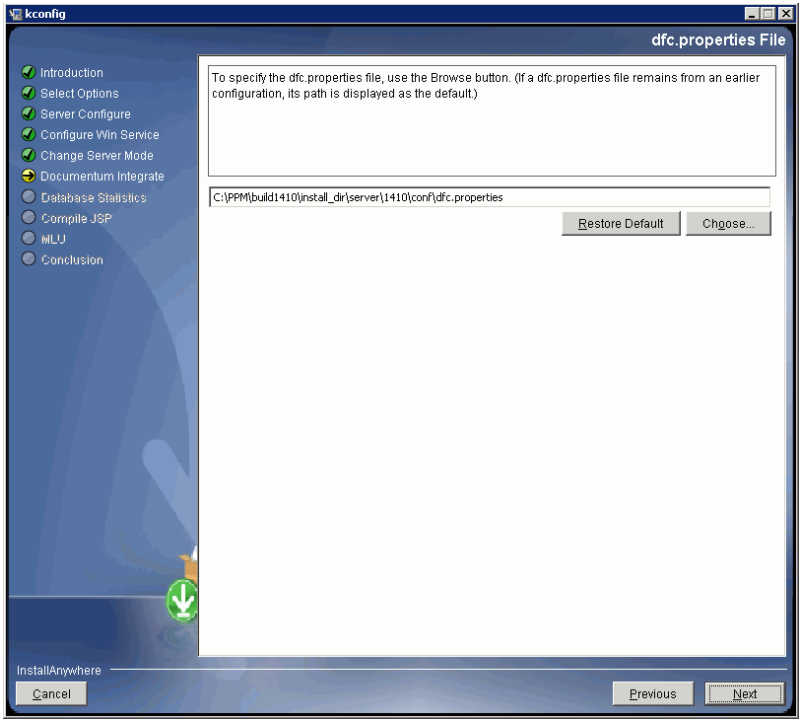


8. On the Select Options step, select the **Integrate the PPM Server with EMC Documentum Content Server** check box, and then click **Next.**

   The configuration wizard lists the Content Server components for which you must supply information.

9. Click **Next.**

   The dfc.properties File step opens.

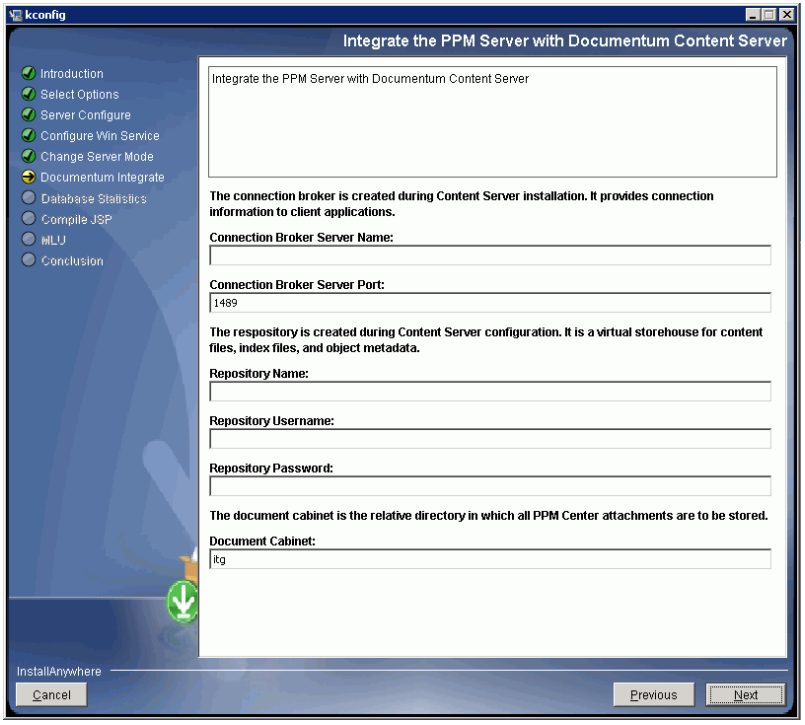


   If a `dfc.properties` file remains on your system from a previous Content Server installation, the path to the file is displayed in the field as the default.

10. To select a `dfc.properties` file other that the default (if shown), use the **Choose** button to navigate to and select the file.

11. Click **Next.**

    The Integrate the PPM Server with Documentum Content Server step opens.



12. Provide the Content Server information listed in the following table:

Field Name (*Required)	Description
*Connection Broker Server Name	Name of the machine that hosts Content Server. (You can use an IP address.)
*Connection Broker Server Port	Port number for the connection broker.
*Repository Name	Name of the Content Server repository.
*Repository Username	Username for the installation owner operating system account on the computer that hosts Content Server.
*Repository Password	Password for the installation owner operating system account on the computer that hosts Content Server.
*Document Cabinet	Relative directory in which to store PPM Center attachments. Content Server repository objects are organized into folders. The document cabinet is a top-level folder in which the PPM Server instance stores attached documents. In `<PPM_Home>/conf/dms.conf`, the `dms.documentum.cabinetName` property specifies the cabinet name to use. HP recommends that you use the default value.

13. Click **Next.**

If the information you provided points to a stand-alone Content Server instance, and the configuration utility cannot find the HP PPM Center Documentum Connector software required to integrate the instance with PPM Center, the utility displays an error message. Before you can proceed with the configuration, you must purchase and deploy the HP PPM Center Documentum Connector software. For instructions, see *Preparing to Integrate PPM Center with a Stand-Alone Instance of EMC Documentum Enterprise Edition* on page 81.

14. If you are integrating PPM Center with a stand-alone Content Server instance, and you want to have a Content Server user created automatically whenever a PPM Center user is created, select the **Automatically create new Content Server users whenever new PPM Center users are created** check box.

    Selecting this option means that you do not have to create an account for the same user in both Content Server and PPM Center.

15. To begin the integration, click **Next.**

    The configuration utility configures the server and copies any existing document attachments into the Content Server repository. Progress bars show the status of the file migration from the PPM Center file system and of the integration as a whole.

16. If some files in the attachments directory could not be converted, the configuration wizard displays a step to advise you of this.

    If this occurs, do one of the following:

    - To resolve the conversion problem, leave the default option (**No, I would like to reconcile the attachments before continuing**) selected, and then click **Next.**
    - To continue without resolving the file conversion problem, select Yes, please integrate my Project and Portfolio Management Server with Documentum, and then click **Next.**

17. After the setup is complete, on the last page, click **Done.**

18. Restart the PPM Server.

After you restart the PPM Server, document management is enabled.

If you have configured PPM Center with an upgraded Content Server instance, documents migrated from the old to the new repository were checked out, those document will have that same status after you run the `kConfig.sh` script.

Enabling Document Management in a Clustered Server Environment

If your PPM Center system includes multiple PPM Servers, you must enable document management on all of the PPM Servers.

For information on PPM Center server clusters, see the *Installation and Administration Guide.*

After you have run the configuration utility to enable document management on the first node (PPM Server) in the server cluster (see *Configuring Document Management in PPM Center* on page 145), do the following:

1. On the PPM Server that is now integrated with Content Server (either embedded or stand-alone instances), navigate to `<PPM_Home>/conf` directory.
2. Copy the `dms.conf` file.

   The `dms.conf` file is a configuration file that contains the connection information for Content Server.

3. On each additional PPM Server in the server cluster, place the copied `dms.conf` file into `<PPM_Home>/conf` directory.

Verifying Document Management Setup in PPM Center

Before you begin to use PPM Center with the document management module, verify the installation and configuration, as follows:

- If your PPM Center instance from an earlier release contained attachments, make sure that you can still access those attachments.
- Attach new documents, modify them, and then check to make sure that the documents are accessible and correctly versioned.

After your organization starts to use the document management module, you cannot easily revert the document management functionality and go back to storing attached documents on the PPM Center file system.

Troubleshooting Configuration

If you encounter any problems during the configuration process, contact HP Software Support.

Useful Tools from EMC

The Documentum Content Server installation bundle contains installation files for three tools that you can use to view files associated with specific PPM Center entities in Content Center repositories and for troubleshooting. These tools are:

- **EMC Documentum Administrator.** Documentum Administrator (DA) is a Web-based tool that you can use to manage and administer Content Server repositories, servers, users, and groups.
- **EMC Documentum RepoInt.** EMC's Repository Interrogation Utility, or RepoInt, lets you navigate Documentum repositories, perform a properties dump, view the type tree of a repository and run DQL or xDQL queries. For more information, go to EMC Developer Network.

Disabling Document Management

To disable document management functionality after you have enabled it, but before attachments are migrated to the repository and added to the repository through the PPM Center standard interface, do the following:

1. Update the `<PPM_Home>/conf/dms.conf` file content to include the following two lines:

   ```
   dms.filesys.attachmentDir=<PPM_Home>\\attachments
   dms.driverName=com.kintana.dms.filesys.DMSFileSystemDriver
   ```

   Note that escaping colon `(:)` and backslash `(\)` characters are required.

   This example is for a PPM Server running on a Windows system. On UNIX systems, use single forward slashes `(/)` as directory delimiters.

To implement the configuration change, stop, and then restart the PPM Server. For instructions on how to uninstall the Content Server software, see the *EMC Documentum Content Server Installation Guide.*

Document Management Security

This section contains information about security and user access with document management.

After you first integrate PPM Center with a stand-alone deployment of Content Center EE, EMC Documentum Content Center users have no access to the PPM Center files and folders stored in the Content Server repository. To give EMC Documentum Content Center users access to the PPM Center files and folders, you assign them to groups in the Documentum repository.

If you have integrated PPM Center with a stand-alone instance of Content Server EE (rather than with the embedded Content Server components that HP supplies), and selected the **Automatically create new Content Server users whenever new PPM Center users are created** option (see step 14 on page 151), users can attach documents to entities in PPM Center. If you did not select that option, to enable users to attach documents to entities, you must create Content Server EE accounts for them.

Groups in Content Server

Once document management is in place, PPM Center automatically creates the following groups in the Content Server repository:

- ppm_all_project
- ppm_all_package
- ppm_all_misc
- ppm_all_request

In addition to these four listed groups, PPM Center creates a group for project types, for individual projects, request types, and for individual requests. You add users to these Documentum groups using an administrative tool such as EMC Webtop or EMC Administrator (see *Useful Tools from EMC* on page 153).

When a user logs on to Content Server (through WebTop or Documentum Administrator), that user has view access to the attachments associated with the group(s) to which you added him or her. To reduce maintenance and provide more granular security, consider assigning users at the request type level or the individual request level.

Synchronizing Repository Folder and Group Names with PPM Center

The names of the folders and groups in the Content Server repository are derived from the names of PPM Center entities such as project types, projects, request types, requests, and so on. If you change the name of a project in PPM Center, you want that change to be reflected in the name displayed for that project in Content Server repository.

For information about how PPM Center attachments are organized and viewed in Content Server, see *PPM Center Documents in the Content Server Repository* on page 212.

You can have entity name changes in PPM Center propagated to the repository automatically by enabling the Synchronize Documentum Folder/Security Group Name background service in PPM Center. When you do, the service picks up entity name changes in PPM Center, based of the schedule that you determine, and applies the changes to Content Server.

To enable and schedule the Synchronize Documentum Folder/Security Group Name background service:

1. Log on to PPM Center.
2. On the **Open** menu, click **Administration > Schedule Services.**

   The Schedule Services page lists all of the available services, and shows the typical load each service manages, whether the service is enabled, the type of expression used to schedule the service, and the current run schedule.
3. In the **Schedule Services** table, click the **Synchronize Documentum Folder/ Security Group Name** row.

   Items in this row becomes editable.
4. From the list in the **Status** column, select **Enabled.**
5. To select a schedule type, do one of the following:
   - To use a simple expression such as hours, minutes, or seconds to schedule the service, in the **Schedule Type** list, leave **Simple** selected.
   - To use a cron expression to schedule the service, from the **Schedule Type** list, select **Cron.**

     For detailed help with scheduling the service, next to the **Schedule Type** list heading, click the help icon after the **Schedule Type** column heading.
6. In the **Schedule** column, provide the simple or cron value to specify the when to run the service.
7. In the top right corner of the page, click **Save.**

8 Configuring Database-Based DMS Solutions

This chapter applies to PPM Center version 9.14.0008 or later.

This chapter provides PPM Center administrators concepts of database-based DMS solutions and some pointers on how to configure the database-based DMS solutions, including database sizing suggestions, instructions on configuring full text search feature as well as creating and maintaining Oracle TEXT indexes.

Overview of Database-Based DMS Solutions

PPM Center offers the following database-based DMS solutions:

- **PPM Center Database DMS** — First introduced in PPM Center version 9.13, enhanced in PPM Center versions 9.14 and 9.14.0008. This DMS solution allows you to store all the documents and associated metadata in your PPM Center database, and provides documents check-in/out and versioning functionalities out-of-the-box. It requires no additional software or hardware products, no additional deployment or configuration. In addition, no extra license cost.
- **PPM Center External Database DMS** — Introduced in PPM Center version 9.14.0008 to provide the same features as the PPM Center Database DMS solution, except that the documents and associated metadata are stored in a different Oracle database on your local network where your PPM Server is located. For information about defining an

external database for this DMS solution, see *Configuring PPM Center External Database DMS Solution* on page 163.

Contents of the documents (in whatever document format) are stored in BLOB fields. The database-based DMS solutions leverage Oracle TEXT to provide full-text search, and the related indexes are CONTEXT indexes, both for metadata and document contents.

PPM Center users experience no difference between a PPM Server using Documentum (either HP version or stand-alone version) and a PPM Server using an Oracle database-based DMS. The only small discrepancy lies in the full text search, where the advanced search operators are slightly different, and the Oracle database-based DMS solutions allow you to search only in the tip documents, or in both the tip version documents and the history.

Therefore, organizations who are managing their PPM Center documents using other solutions, EMC Documentum or the PPM Center file system, can easily migrate their current DMS to either of the new database-based DMS solution. For details on how to migrate to a database-based DMS solution, see *Migrating DMS Using the Administrator Console Tool* on page 178.

By default, document contents are stored in the default PPM Center tablespace USER_CLOB, while the metadata and the TEXT indexes (when created) are stored in the default PPM Center tablespace USER_DATA. DBAs can change the tablespaces used by PPM Center Database DMS. For example, to save DB disk space by compressing documents contents, or by tuning tablespace-level settings that would provide better performance for their specific usage. Such customization of tablespace is supported, but out of the scope of this document.

Table 8-1 describes server configuration parameters that were introduced to implement the database-based DMS solutions.

Table 8-1. Server configuration parameters introduced (page 1 of 2)

Parameter name	Description, Usage	Default and Valid Values
DMS_DB_ENABLE_FULLTEXT_SEARCH	Setting this value to `true` enables the database full text search feature. Note that administrators shall create and build database indexes in advance. For details, see *Configuring Full Text Search in Database-Based DMS Solutions* on page 166.	Default: `false` Valid values: `true, false`
DMS_FILENAME_DISPLAY_LENGTH	Specifies filename display length.	Default: `30` Valid values: `integer`
DMS_FILENAME_SEARCH_MAX_RESULTS	Specifies maximum number of matching items before applying filters from other search criteria, such as creation date or "Closed" status. You may need to increase this value if too many filename matching items are filtered out by very selective search criteria.	Default: `1000` Valid values: integer
DMS_MIGRATION_DELAY_BETWEEN_DOCUMENT	Specifies duration (in seconds) that a thread will wait between two documents to migrate. To lighten the load of the migration process on the PPM Server, increase the value of this parameter.	Default: `0` Valid values: `integer`
DMS_MIGRATION_DOCUMENTS_BATCH_SIZE	Specifies the number of documents that to be queued for migration on a given PPM Service node. Every time the DMS Migration Engine Service runs on a Service node, the queue of documents to migrate is filled up.	Default: `1000` Valid values: integer

Table 8-1. Server configuration parameters introduced (page 2 of 2)

Parameter name	Description, Usage	Default and Valid Values
DMS_MIGRATION_THREAD_COUNT	Specifies number of threads that will be migrating documents on a given PPM Service node.	Default: 3 Valid values: integer
MAX_WEB_ATTACHMENT_SIZE_IN_MB	Specifies maximum attachment size (in MB) for files uploaded using PPM Center web interface. Attachments size is capped at 2 GB.	Default: 2048 Valid values: integer

Database-Based DMS Concepts

This section provides information that help database administrators (DBAs) to understand the features and limitations of the database-based DMS solutions, including:

- *Data Tables*
- *Documents Contents Tablespace*
- *Full Text Search Feature*

Data Tables

The documents information and contents are stored in the following four tables:

- **KNTA_DOCUMENTS**: Used by all PPM Center DMS solutions (File System, PPM Center Database DMS, and PPM Center External Database DMS). It stores the documents information that is displayed in the **References** section of a PPM Center entity page, as well as the current "check out" status of the document.

  The following three columns are only used during documents migration:
  – MIGRATION_STATUS

– LAST_FLAGGED_TIME
– ENGINE_UUID

- **KNTA_DOCUMENT_VERSIONS**: Stores the document version metadata, including filename, file size, extension, version comment, version check in date and user.
- **KNTA_DOCUMENT_TIP_CONTENTS**: Stores a copy of the document metadata from the KNTA_DOCUMENTS table (document name, description, author, and so on) and the latest version, as well as the binary contents of the latest version of the document in BLOB column DOC_CONTENTS for full-text indexing.
- **KNTA_DOCUMENT_HISTORY_CONTENTS**: Stores a copy of the metadata from KNTA_DOCUMENT_VERSIONS, as well as the binary contents of all non-tip versions of documents in DOC_CONTENTS for full-text indexing.

Every time a new version of a document is checked in, the row related to this document is copied from the KNTA_DOCUMENT_TIP_CONTENTS table to the KNTA_DOCUMENT_HISTORY_CONTENTS table, and the document contents of the new version are updated in the DOC_CONTENTS column of the KNTA_DOCUMENT_TIP_CONTENTS table.

For details about these tables, see the *Data Model Guide*.

Documents Contents Tablespace

All binary documents contents are saved in the two DOC_CONTENTS columns (BLOB) of the KNTA_DOCUMENT_TIP_CONTENTS table and the KNTA_DOCUMENT_HISTORY_CONTENTS table.

These columns are using the PPM Center default CLOB tablespace upon creation. However, considering that the amount of data stored in attachments can be very large (up to tens of GB), you might prefer to store these attachments in a separate dedicated tablespace.

Though this is supported, HP recommends you to change the tablespace of these columns before performing the migration, so that all documents can directly use the newly configured tablespace.

You can use compressed tablespaces to store DMS documents. This could significantly reduce the space needed on the disk of PPM Center database.

Full Text Search Feature

By default, the full text search feature is not enabled with PPM Center Database DMS or PPM Center External Database DMS.

In order to enable full text search, DBAs must first create the TEXT indexes on documents contents and metadata, and modify a server parameter (from the Administrator Console of PPM Center). For detailed instructions, see *Configuring Full Text Search in Database-Based DMS Solutions*. PPM Server restart is not required.

Why not enable Full text search by default?

The PPM Center Database DMS or PPM Center External Database DMS solution relies on Oracle TEXT technology to perform full text search. There are multiple ways to configure the Oracle TEXT indexes, and DBAs shall choose which configuration suits their users' preferences best, especially in how often the indexes will be updated.

Moreover, HP recommends DBAs to create the indexes after you have completed migrating your documents, so that the indexes can be created in one run, having no impact on migration performance. As indexes creation is a database-intensive operation, it is also better to let DBAs decide when this operation should occur in order to minimize the impact on PPM Center users.

Readers are assumed to be knowledgeable about Oracle TEXT. If that is not the case, HP strongly encourage you to read the *Oracle TEXT Application Developer's Guide* (http://download.oracle.com/docs/cd/B28359_01/text.111/b28303.pdf) or to consult Oracle online documentation related to Oracle TEXT.

Configuring PPM Center Database DMS Solution

You can complete the configuration work when you prepare to migrate your current DMS to the PPM Center Database DMS. For details, see *Migrating DMS Using the Administrator Console Tool* on page 178.

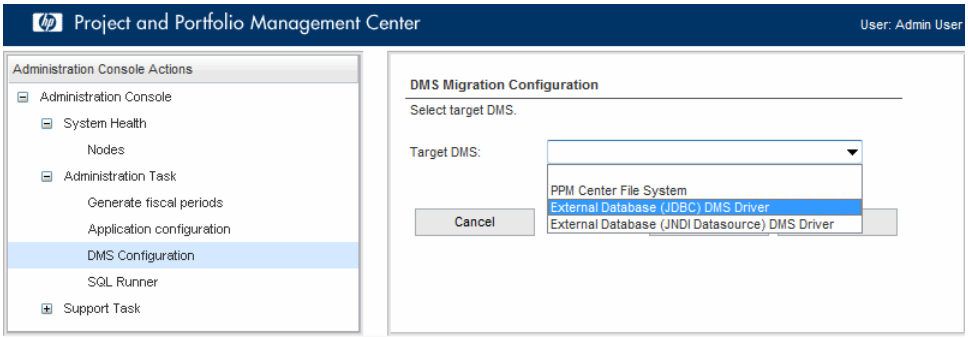
Configuring PPM Center External Database DMS Solution

There are two ways to define the external DB schema to use for storing documents:

- By providing JDBC connection parameters (the **External Database (JDBC) DMS Driver** option)
- By creating a new JNDI datasource on your PPM Server and providing the JNDI name of that datasource (the **External Database (JNDI) DMS Driver** option)

You can find these two options in the list of supported **Target DMS** options in the DMS Migration Configuration screen of the Administration Console.

Figure 8-1. Available DMS Migration options for a PPM server currently using PPM Center Database DMS



Why Store the DMS Documents on Another Database Schema?

You might not want to store them in the PPM Center database schema for different possible reasons:

- Your PPM Center database schema is regularly backed up, and the extra documents space renders back-up procedure too time-consuming if the volume of PPM Center attachments is very large (hundreds of GB).
- You would like to back up your PPM Center database daily, but it is acceptable to back up attachments only weekly or monthly.
- You do not want any additional load on the PPM Center production database to be caused by attachments storage, retrieval and searches.

Which Option (JDBC or JNDI) to Choose?

The short answer is: For staging and production environments, you should always choose the JNDI option, but for test and development environments, JDBC should be enough and is simpler to set up.

	External Database (JDBC)	External Database (JNDI)
Advantages	Simple to setup (no change on PPM Server).	Better performance (JDBC connections are pooled and reused). Allows exhaustive configuration of datasource.
Disadvantages	Performance impact: A new JDBC connection must be created for every DMS operation (download a document, save a document, search documents).	Needs to create datasource on each of your PPM Server(s).

Creating JNDI Datasource

If you select **External Database (JNDI Datasource) DMS Driver** as your target DMS solution, you need to create a datasource pointing to the DB Schema to

use for storing documents on each of your PPM Server nodes. All these datasources must point to the same schema, and this schema cannot be the PPM Center database schema (otherwise you should simply use the PPM Center Database DMS solution for storing documents in the PPM Center database schema).

To create your JNDI datasource,

1. Go to `<PPM_Home>/server/<PPM_Instance>/deploy` directory, make a copy of the `itg-ds.xml` and rename the copy (for example `dms-ds.xml`).

The new file name MUST end with "**`-ds`**`.xml`" and it MUST be located in the `/<PPM_Instance>/deploy/` directory.

2. Edit the file content.

   Replace the highlighted values with the JNDI name of your choice and the connection parameters of your DMS database schema. You can also change other parameters (`max-pool-size`) to meet your needs.

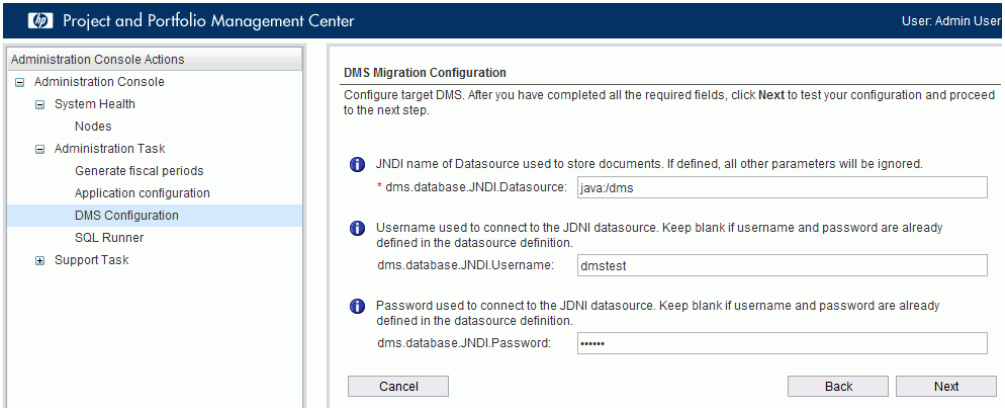
   Though you can define the values for `<user-name>` and `<password>` in this file, it is not recommended as you can provide them on the DMS Configuration screen, and the password will be encrypted in PPM Center (while it would appear in clear text if defined in this file).

```
<?xml version="1.0" encoding="UTF-8"?>
<datasources>
  <local-tx-datasource>
    <jndi-name>dms</jndi-name>
    <connection-url>jdbc:oracle:thin:@11.22.33.44:1521:dms_
                                                  sid</connection-url>
    <driver-class>oracle.jdbc.driver.OracleDriver
                                                        </driver-class>
    <max-pool-size>60</max-pool-size>
    <blocking-timeout-millis>180000</blocking-timeout-
                                                              millis>
    <idle-timeout-minutes>60</idle-timeout-minutes>
    <check-valid-connection-sql>select 1 from dual</check-
                                               valid-connection-sql>
  </local-tx-datasource>
</datasources>
```

Make sure you remove the `<security-domain>` element.

3. Repeat step 1 and step 2 to create the JNDI datasource on each of your PPM Server cluster nodes.
4. Restart your PPM Servers.
5. You can now launch the Administration Console to perform DMS migration, and provide the JNDI datasource as shown in *Figure 8-2*.

Figure 8-2. Creating JNDI datasource



Make sure you prefix your datasource name in the **dms.database.JNDI.Datasource** field with "**`java:`**". For example, **`java:`**`dms`, or **`java:`**`/dms`.

Configuring Full Text Search in Database-Based DMS Solutions

To enable full text search in the PPM Center Database DMS or PPM Center External Database DMS solution,

1. Connect to PPM Center database or the external database as SYS DBA, and grant `CREATE JOB` and `CTXAPP` privileges to PPM Center database users or external database users by running the `oracle_dms_sysdba_user_manual_script.sql` script.

   After installation of PPM Center version 9.14.0008, the SQL scripts shall be present in <*PPM_Home*>`/utilities/database_dms/DatabaseDMS_FullTextSearch_Scripts.zip`.

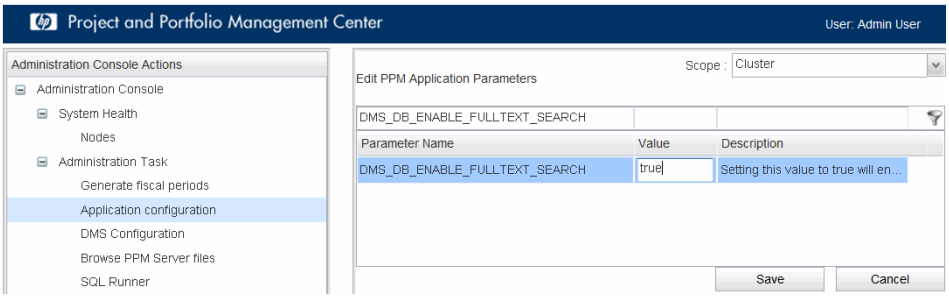
2. Connect to PPM Center database or the external database with PPM USER (&PPM_SCHEMA), and then create full text search indexes by running the `oracle_dms_ppm_user_manual_script.sql` script.
3. Wait for the indexes to be created.

   This can take some time if you have a large number of documents.
4. Set the value of server configuration parameter `DMS_DB_ENABLE_FULLTEXT_SEARCH` to `true` in PPM Center from the Administration Console.

   To do so,

   a. From the Administration Console Actions pane, click **Administration Task > Application configuration**.

   b. Locate the `DMS_DB_ENABLE_FULLTEXT_SEARCH` parameter, and set its value to `true`.



   c. Click **Save**. (No need to restart the PPM Server.)

5. Verify that the **Document Key Words** search fields are available in PPM Center by going to **Search > Projects/Programs/Requests**, or any other entity that supports document management.

Enabling the full text search feature requires creation of all the indexes in the first place. Otherwise it might result in an error whenever an user runs a full text search.

Best Practices and Notes on Indexing

- There is no perfect setting related to how often the indexes should be refreshed. Refreshing it too often might result in fragmented indexes, while a very long delay between refreshed would cause outdated indexes and might result in users not being able to search and retrieve documents recently added. It is up to DBAs to decide the optimum setting in accordance with your database administration policies and PPM User's expectations. Note that HP strongly recommends you not using the **SYNC ON COMMIT** setting as it would result in significant performance overhead when documents are added to the system as well as severe index fragmentation.
- The default LEXER used is WORLD_LEXER, which is especially adapted for a multi-lingual document base. If you are only storing documents in a language other than English, then you may use a different LEXER than the WORLD_LEXER used by default. You may use, for example, the CHINESE_LEXER, if all documents stored are in Chinese. You are free to use whatever LEXER that better fits your needs.
- The multi-column index on metadata of both TIP and HISTORY tables is created on the FULL_TEXT_META column. A trigger is already created that will update this column whenever one of the indexed column is updated. This is required to correctly update the index.
- You may want to configure a significant amount of indexing memory when you create the indexes in case you have a very large amount of documents to index. For more information, see Oracle documentation related to Oracle TEXT indexing performance.
- Oracle TEXT indexes can be very large if there is a large amount of text intensive documents to index (text files, log files, XML, and so on). You

may want to make sure that the tablespace hosting these TEXT indexes can accommodate such an amount of data.

- For a list of all the file formats supported for indexing by Oracle TEXT, see http://download.oracle.com/docs/cd/E11882_01/text.112/e16593/afilsupt.htm.
- PPM Center Database DMS Full Text Search feature relies on Oracle TEXT only. As a result, the performance and results of PPM documents full text search when using PPM Center Database DMS solely relies on the settings you used when creating these indexes.

Creating and Maintaining Oracle TEXT Indexes

Creating TEXT Indexes

You might wonder why TEXT indexes are not created automatically, like other PPM Indexes.

PPM Center Database DMS relies on creation of Oracle TEXT indexes on documents contents and metadata to provide full-text search on documents.

The index creation is not included as part of PPM Center version 9.13, 9.14, or 9.14.0008 installation for multiple reasons:

- PPM Center Service Packs installation SQL Scripts can only be run with PPM DB User, not SYS; however, a PPM DB User needs to be granted CTXAPP and CREATE JOBS access grants before he can create TEXT indexes, and only SYS can provide these grants to PPM DB User.
- If for some reason you plan to use PPM Center Database DMS but have no plan to use full-text search, there is no need to waste DB resources with these indexes, as they are both space and CPU consuming.
- You need to decide or customize the parameters to use to create the TEXT index.

  HP does not offer the recommendation as the answers for the following questions vary with each customer:

  - Do you prefer real-time indexing at the cost of a performance impact and a fragmented index on the long run, or is it acceptable to refresh the index only every 24 hours?
  - Is the WORLD_LEXER HP uses by default acceptable for you? Or should you rather use a Japanese Lexer in case you store many Japanese documents?

  Your DBAs are likely to do a better work at creating the TEXT indexes you need by providing default index creation scripts.

Due to a third-party product limitation, users can not attach documents to PPM Center entities while PPM Center Database DMS full text index creation is in progress. If they do so, they may receive an error message.

Default TEXT Index Creation Script

The default TEXT index creation script can be found at the following path on an instance of PPM Center 9.13 or later:

`<PPM_Home>/utilities/database_dms/DatabaseDMS_FullTextSearch_Scripts.zip`

The zip package contains two files:

- The script to run as SYS user to give PPM DB User the required grants to create TEXT indexes.
- The default index creation script. You may want to customize this script to meet your requirements.

TEXT Index Creation Parameters

The first parameter that you may want to update is the lexer used when indexing documents. By default, HP uses `WORLD_LEXER` as it supports a wide range of languages (including all languages supported by PPM Center). Refer to the following Oracle documentation for more choices of lexer that might give you better results: http://docs.oracle.com/cd/B28359_01/text.111/b28304/amultlng.htm#CEGBCDHJ

The other parameter that you may want to modify when creating indexes is the delay between TEXT indexes refresh. This is set in the "`SYNC (every sysdate+XXX)`" of the index creation SQL, where *XXX* is the average duration between two index refreshes expressed in days. So, using "`T/1440`" allows you to easily express duration `T` in minutes.

The default script creates indexes that will be refreshed every 10 minutes [`SYNC (every sysdate+1/144)`]. In other words, when users add a document to PPM Center, they may have to wait up to 10 minutes before the document can appear in the search results.

Setting this value to a short delay allows users to see documents shortly after adding the documents in PPM Center, but will result in index fragmentation on the long run. Fragmented indexes result in slower searches. This can be solved by optimizing the index or dropping and re-creating the index. For more information, see the *Maintaining TEXT Indexes* section below.

If you do not want to wait for a document to be indexed after adding it to PPM Center, you can use the option `SYNC (ON COMMIT)`. However, note that when doing so, there will be a noticeable performance impact as the document indexing is done as part of the transaction. Moreover, this results in a very fragmented index on the long run, requiring frequent optimizations, and possibly indexes full rebuilds.

If you choose the `SYNC (ON COMMIT)` option for all your TEXT indexes, the PPM DB User does not need the “CREATE JOB” access grant. Only CTXAPP is required.

Maintaining TEXT Indexes

If your users start to witness slow document searches after some time while using PPM Center Database DMS, the possible root cause might be TEXT index fragmentation. There are two solutions when this occurs:

- Drop and re-create the index(es). This can be time consuming if you have lots of documents, and during the index rebuilding time, not all documents might be searchable.
- Optimize the index(es). There are multiple levels of index optimization depending on how complete you want the optimization to be. For example, to perform a fast optimization of the tip document contents index, you should run:

```
exec ctx_ddl.optimize_index('DMS_TIP_DOC_IDX','FAST');
```

Extensive documentation on Oracle TEXT index optimization can be found on Oracle web site, such as:
http://docs.oracle.com/cd/B28359_01/text.111/b28303/ind.htm#i1007604, or
http://docs.oracle.com/cd/B28359_01/text.111/b28304/cddlpkg.htm#CCREF0638

9 Upgrading and Migrating DMS Solutions

Warning Regarding DMS Configuration and PPM Center Database Dump and Cloning (after PPM Center version 9.13)

If you are cloning a PPM Center environment by dumping database (for example, cloning a PROD environment to DEV or TEST), the DB Dump will include DMS configuration. This means that, unless you are using PPM Center Database DMS (which does not have any configuration), if left unmodified, the new environment will point to the same DMS location (File System, DB, or Documentum server) as the original cloned environment. This would result in data corruption, and should be avoided.

In order to safeguard your DMS configuration before importing a new Database dump, follow these steps to import from a SOURCE DB dump into a TARGET environment:

1. Before importing the source dump in the target environment, while target environment is down, copy the contents of the CONFIGURATION column from the DB table PPM_INT_CONFIGURATIONS row with value SOLUTION_ID=1200 in the file `<PPM_HOME>/conf/dms.conf`. (You only need to do this if the content of the `dms.conf` file and the configuration text content from DB are different.)
2. Import the source DB dump into the target DB.
3. Delete the row from PPM_INT_CONFIGRATIONS with `SOLUTION_ID=1200` from the target DB by running the following command:
   `DELETE FROM PPM_INT_CONFIGURATIONS WHERE SOLUTION_ID=1200;`
4. Start FIRST the PPM server from the PPM_HOME with the up-to-date `dms.conf` file.
   In cluster node, you need to have only one PPM_HOME with a valid `dms.conf` file, and it should be started first.
   Upon server startup, since the row with SOLUTION_ID=1200 is missing from the DB, the DMS configuration will automatically be read from `dms.conf` and saved to database. This will happen only once on server startup. From that moment, `dms.conf` will never be accessed anymore (unless the row is deleted from the DB again), and if in cluster mode, all other PPM servers will read the DMS configuration directly from the database.

This chapter applies to PPM Center version 9.14.0008 or later.

This chapter provides step-by-step instructions on migrating a DMS solution using the Administrator Console tool DMS Configuration and detailed information about upgrading and migrating DMS solutions from PPM Center version 9.12 or earlier.

Supported DMS Migration Paths

Table 9-1 lists supported DMS migration paths.

Table 9-1. Supported DMS migration paths

From	To
Documentum-based DMS [a]	One of the following: • PPM Center File System • PPM Center Database DMS • PPM Center External Database DMS
PPM Center File System	One of the following: • PPM Center Database DMS • PPM Center External Database DMS
PPM Center Database DMS	One of the following: • PPM Center File System • PPM Center External Database DMS
PPM Center External Database DMS	One of the following: • PPM Center File System • PPM Center Database DMS • PPM Center External Database DMS[b]

a. Include DMS solutions based on either embedded Documentum Content Server software HP supplies or integration with stand-alone Documentum Content Server software using connector. If you migrate from a Documentum-based DMS solution, make sure you read carefully the *Special Notes When Documentum is the Current DMS* on page 180.

b. You can migrate your DMS from using an external DB schema to using a different external DB schema, regardless of which connection method you are using (JNDI or JDBC).

Typical Upgrade and Migration Scenarios

Table 9-2 lists typical upgrading and migration scenarios and the high-level steps.

Table 9-2. High-Level Steps for Upgrading and Migrating a DMS solution (page 1 of 3)

Current Setup	Target Setup	How to Migrate
PPM Center version 9.14.0008, with PPM Center Database DMS as the default DMS	PPM Center version 9.14.0008 with • File System DMS, or • PPM Center External Database DMS	1. Migrate DMS to File System or PPM Center External Database DMS using Administration Console tool DMS Configuration 2. Enable Full Text Search functionality if using database-based DMS (optional)
PPM Center version 9.13 or 9.14 with document management based on Documentum Content Server EE 6.5 SP2	PPM Center version 9.14.0008 with PPM Center Database DMS	1. Fix broken documents (if any). 2. Deploy the DMS hotfix on top of PPM Center version 9.13 or 9.14 3. Migrate the Documentum-based DMS to PPM Center Database DMS using the Administration Console tool 4. Deploy PPM Center version 9.14.0008 5. Enable Full Text Search functionality (optional)
PPM Center version 9.12 or earlier (no document management)	PPM Center version 9.14.0008 with PPM Center Database DMS	1. Upgrade PPM Center to version 9.14 by following PPM Center upgrade path 2. Deploy PPM Center version 9.14.0008 2. Enable Full Text Search functionality (optional)

Table 9-2. High-Level Steps for Upgrading and Migrating a DMS solution (page 2 of 3)

Current Setup	Target Setup	How to Migrate
PPM Center version 8.0X, 9.10, 9.11, or 9.12 with document management based on embedded Documentum Content Server EE 6.5 SP2	PPM Center version 9.14.0008 with PPM Center Database DMS	1. Run the PPM Center server configuration utility (the `kConfig.sh` script) to verify that the integration works fine 2. (PPM Center version 8.0x only) Upgrade PPM Center to version 9.10 3. Upgrade PPM Center to version 9.14 4. Deploy the DMS hotfix on top of PPM Center version 9.14 5. Run `kConfig.sh` to fix broken documents (if any). 5. Migrate the Documentum-based DMS to PPM Center Database DMS using the Administration Console tool DMS Configuration 6. Deploy PPM Center version 9.14.0008 7. Enable Full Text Search functionality (optional)
PPM Center version 8.0X, 9.10, 9.11, or 9.12 with document management based on stand-alone instance of Documentum Content Server EE 6.5 SP2	PPM Center version 9.14.0008 with PPM Center Database DMS	1. (PPM Center version 8.0x only) Upgrade PPM Center to version 9.10 2. Upgrade PPM Center to version 9.14 3. Deploy the DMS hotfix on top of PPM Center version 9.14 4. Fix broken documents in Documentum (if any) by contacting HP Software Support 5. Migrate the Documentum-based DMS to PPM Center Database DMS using the Administration Console tool DMS Configuration 6. Deploy PPM Center version 9.14.0008 7. Enable Full Text Search functionality (optional)

Table 9-2. High-Level Steps for Upgrading and Migrating a DMS solution (page 3 of 3)

Current Setup	Target Setup	How to Migrate
PPM Center 7.5 with document management based on embedded Documentum Content Server EE 5.3 SP2	PPM Center version 9.14.0008 with PPM Center Database DMS	1. Run `kConfig.sh` to verify that the integration works fine 2. Upgrade to PPM Center version 8.00 3. Upgrade the stand-alone Content Server from version 5.3 to version 6.5 4. Run `kConfig.sh` to upgrade the stand-alone Content Server 6.5 software. 5. Upgrade PPM Center to version 9.10, then 9.14 6. Deploy the DMS hotfix on top of PPM Center version 9.14 7. Run `kConfig.sh` to fix broken documents in Documentum (if any) 8. Migrate the Documentum-based DMS to PPM Center Database DMS using the Administration Console tool DMS Configuration 9. Deploy PPM Center version 9.14.0008 10. Enable Full Text Search functionality (optional)

Migrating DMS Using the Administrator Console Tool

This section provides information about step-by-step instructions on DMS migration, using PPM Center Database DMS as the example target DMS solution.

Advantages of the DMS Migration feature

The DMS Migration feature introduced since PPM Center 9.13 (**Administration Console > DMS Configuration**) allows you to migrate easily from a current DMS solution to a target DMS solution:

- Migration occurs while PPM Server is online, and has almost no impact on PPM users. They can keep on checking in and checking out files, and adding new attachments.
- Once the migration is completed, you are able to test the new solution during a "transition period" while the old solution is still available. If you meet any issue with the new DMS system, you can always cancel the migration and go back to the old solution, and no document is lost in the process.
- You can schedule the time at which the migration is running, and adjust different parameters to control what load the migration can have on the PPM system. Note however that migration process has a relatively limited impact on PPM Server performance under standard server load.

Before the Migration

Though migrating DMS is practically as simple as clicking a button in the Administration Console, there are a few things of interest to know before proceeding. Before you start the migration, read the following carefully and take necessary actions:

- *Update Tablespaces before the Migration*
- *Create Indexes on Tables AFTER the Migration*
- *Configure to Relieve Load on PPM Service Nodes during the Migration*

- *Special Notes When Documentum is the Current DMS*

Update Tablespaces before the Migration

If your DBA wants to change the tablespace used to store the document contents, this should preferably be done before the migration, as there is no data in the tables at that point. If you already started a migration before but cancelled it, there are already some data in the PPM Center Database DMS DB tables; you can safely truncate these tables. But do NOT change anything in the KNTA_DOCUMENTS table, as it is used by all three DMS solutions to store document information and should never be modified manually.

Create Indexes on Tables AFTER the Migration

If you plan on using Full Text search, do NOT create the indexes on the tables before the migration. The reasons are:

- Performance impact on migration, additional load on Database Server CPU during the migration due to indexes update.
- Updating the index while new documents are being added can result in more fragmented indexes, especially if the indexes are set to SYNC (ON COMMIT). You can get better results by creating the index after all documents are added.
- Trying to remove a document (which can happen during the migration) while the TEXT index is currently being constructed can result in an Oracle error (`ORA-29861: domain index is marked LOADING/FAILED/UNUSABLE`).

Configure to Relieve Load on PPM Service Nodes during the Migration

The default DMS Migration settings provides a good migration speed, but might result in a heavy load on PPM Service nodes and PPM Center database. The easy way to relieve the load during peak hours is to pause the migration (this can be easily done from the migration page in the Administration Console).

However, if you want to alleviate the overall load on PPM Server during the migration process, you can:

- Update the following parameters from the Administration Console of PPM Center before starting the migration (No PPM Server restart needed)

Parameter name	Description, Usage	Default and Valid Values
DMS_MIGRATION_DELAY_BETWEEN_DOCUMENT	Specifies duration (in seconds) that a thread will wait between two documents to migrate. To lighten the load of the migration process on the PPM Server, increase the value of this parameter.	Default: `0` Valid values: `integer`
DMS_MIGRATION_THREAD_COUNT	Specifies number of threads that will be migrating documents on a given PPM Service node.	Default: `3` Valid values: integer
DMS_MIGRATION_DOCUMENTS_BATCH_SIZE	Specifies the number of documents that to be queued for migration on a given PPM Service node. Every time the DMS Migration Engine Service runs on a Service node, the queue of documents to migrate is filled up.	Default: `1000` Valid values: integer

- Change the scheduling of the DMS Migration Engine Service on the Schedule Services page. This dedicated heavy service runs regularly and fills a queue of documents to migrate on the PPM Server node where the service runs (which could be any node configured to run heavy services). Default setting is to run the service every 30 seconds. However, do NOT enable or disable that service manually from this page.

  For details about configuring the DMS Migration Engine Service, see the *Configure the Migration Background Service*.

Special Notes When Documentum is the Current DMS

If you are migrating from Documentum-based DMS to PPM Center Database DMS, you might run out of Documentum sessions during the migration with the default configuration (including default Documentum Server configuration).

The reason is that documents operations are asynchronous, and Documentum sessions can be busy for some time even when the document operation on PPM

Server has completed. As the DMS Migration is a very demanding process, sometimes you might run out of Documentum sessions, which results in failure of some documents to be migrated.

This is not a blocking issue as you can retry migrating failed documents until they are successfully migrated. However, it results in unneeded manual operations. You can reduce the probability of running into such an issue by resorting to the following options:

- Use one migration thread only.
- Add a delay between documents to migrate (of `1` second or more). This gives time for the asynchronous operations to complete. Considering the performance impact, you should only resort to this option after you have tried to migrate all documents at least once.
- Reduce the documents migration batch size so there can be some idle time between two migration service triggering.
- Increase the maximum number of Documentum sessions on Documentum server. To do so, edit the `$DOCUMENTUM/dba/config/<DOCBASE_NAME>/server.ini` file, and increase the value of `concurrent_sessions` (default: `100`).

Preparing for the Migration

The number of threads to be used for migration should be set before the migration starts. The migration service scheduling or the maximum size of documents migration queue can however be modified in the middle of the migration.

You can adjust different parameters to control when the migration runs, and how much load on PPM Server it might generate.

In addition, you can do the follows.

Estimate the Migration Duration

To help estimate how long the migration may take, you may run some SQLs to count documents and to estimate total size of files in the system:

- To count how many documents are in the system, run the following:

  ```
  SELECT COUNT(*) FROM KNTA_DOCUMENTS
  ```

- To count how many document versions are in the system, run the following:

  ```
  SELECT SUM(VERSION_NUMBER) FROM KNTA_DOCUMENTS
  ```

- To estimate the total size of files in the system, run the following:

  ```
  SELECT SUM(FILESIZE*VERSION_NUMBER) FROM KNTA_DOCUMENTS
  ```

Normally 1 GB of data (around 3000 documents with the average document size of 333 KB) can be migrated in less than 10 minutes.

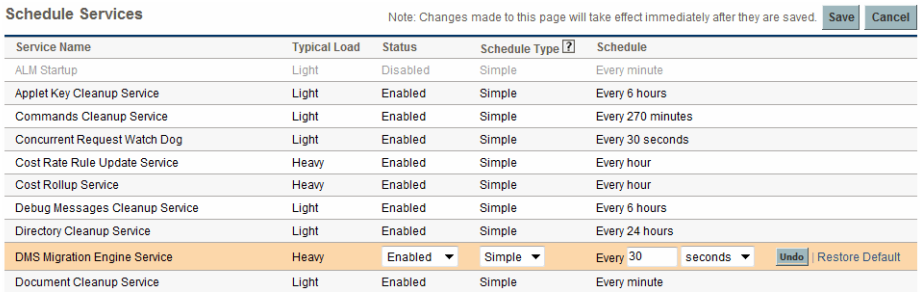
Configure the Migration Background Service

To schedule the DMS Migration Engine Service,

1. Log on to PPM Center.
2. On the **Open** menu, click **Administration > Schedule Services.**

   The Schedule Services page lists all of the available services, and shows the typical load each service manages, whether the service is enabled, the type of expression used to schedule the service, and the current run schedule.

3. Locate and click the **DMS Migration Engine Service**.
4. From the drop-down list in the **Status** column, select **Enabled**.



5. To select a schedule type, do one of the following:

- To use a simple expression such as hours, minutes, or seconds to schedule the service, in the **Schedule Type** list, leave **Simple** selected.
- To use a cron expression to schedule the service, from the **Schedule Type** list, select **Cron**.

For detailed help with scheduling the service, next to the **Schedule Type** list heading, click the help icon after the **Schedule Type** column heading.

6. In the **Schedule** column, provide the simple or cron value to specify the DMS Migration Engine Service run interval.
7. In the top right corner of the page, click **Save**.

- All the nodes configured to run PPM Center heavy services will eventually run migration service as scheduled. So migration will eventually run on multiple PPM nodes if more than one node is configured to run heavy services.
- The DMS Migration Engine Service is automatically enabled when you click **Start Migration** in the Administration Console, and disabled when you click **Cancel Migration** or **Commit**.
- The schedule should be set in accordance with the migration batch size. It can negatively impact the speed of migration if the documents migration queue runs out of documents to migrate before the service is re-invoked.

- If the migration service is invoked on a node where the documents migration queue is not empty, it will fill the queue so that the total number of documents in the queue matches the migration batch size.
- When a migration is in progress, disabling the DMS Migration Engine Service terminates the migration. However, you should use the **Pause** button if you want to pause the migration. This is more efficient, as simply disabling the service would still need to wait for all documents in the queue to be processed.

Step-by-step DMS Migration

The DMS migration is a wizard-driven process. The DMS Migration wizard walks you step-by-step through the entire migration process, including the following stages:

- Select target DMS
- Configure target DMS
- DMS migration in progress

- Start DMS Transition
- DMS Transition in progress
- Commit the migration

To migrate a DMS,

1. Log in to PPM Center and launch the Administration Console.
2. From the Administration Console Actions pane of the Administration Console window, click **Administration Task > DMS Configuration**.
3. On the DMS Configuration page, click **Migrate**.

   The wizard displays the “Select target DMS” page.

Select target DMS

4. From the **Target DMS** drop-down list, select a target DMS.

   The available options vary with your current DMS. For example, if you migrate from PPM Center File System, the available options for **Target DMS** will include:

   - **PPM Center Database DMS**
   - **External Database (JDBC) DMS Driver**
   - **External Database (JNDI Datasource) DMS Driver**

   The latter two options are two ways of defining the external database for the PPM Center External Database DMS solution. For more information, see *Configuring PPM Center External Database DMS Solution* on page 163.

   If you migrate your current DMS (Documentum or PPM Center Database DMS) to PPM Center File System, a warning message shows up stating that some document information might not be preserved due to unsupported functionalities by the target DMS.

5. Click **Next**.

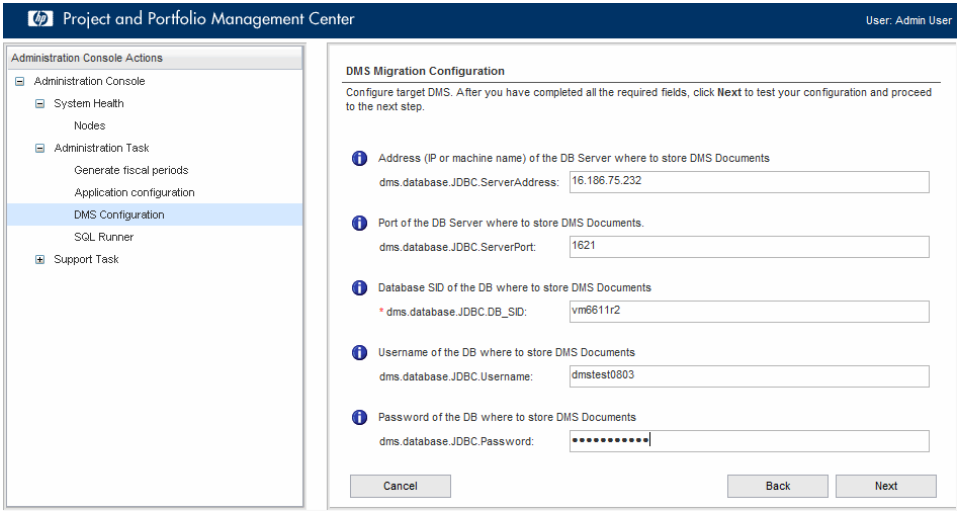
   The wizard displays the “Configure target DMS” page.

Configure target DMS

6. On the “Configure target DMS” page, provide values for all required fields.

   - If you selected **PPM Center Database DMS** as the target DMS, there are no empty fields on this page. Proceed to next step.
   - If you selected **External Database (JDBC) DMS Driver** as the target DMS, provide values as described in the table below.

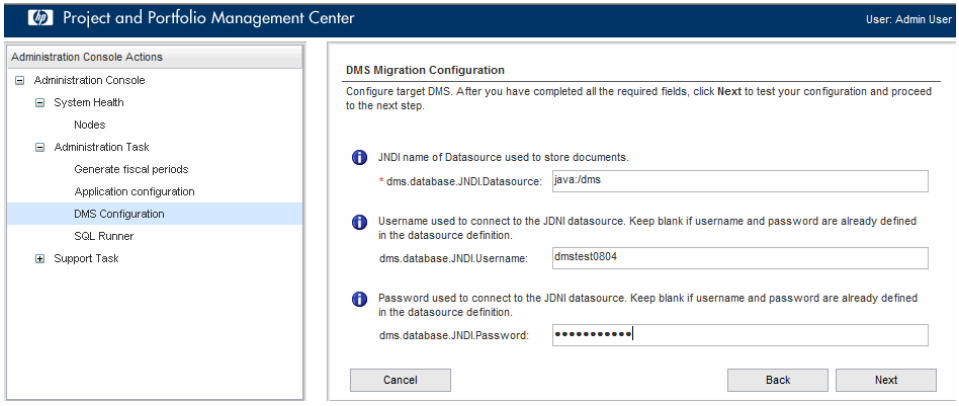
Field (*required)	Description, Sample Value
dms.database.JDBC.ServerAddress	Address (IP address or machine host name) of the DB Server where to you plan to store DMS documents.
dms.database.JDBC.ServerPort	Port of the DB Server where you plan to store DMS Documents.
*dms.database.JDBC.DB_SID	SID of the DB server where you plan to store DMS documents.
dms.database.JDBC.Username	Username of the DB server where you plan to store DMS documents
dms.database.JDBC.Password	Password of the DB server where you plan to store DMS documents



- If you selected **External Database (JNDI Datasource) DMS Driver** as the target DMS, make sure you have created your JNDI datasource, then provide values as described in the table below.

  For information about how to create JNDI datasource, see *Creating JNDI Datasource* on page 164.

Field (*required)	Description, Sample Value
*dms.database.JNDI.Datasource	Specify the JNDI name of the datasource used to store documents. **Note:** Make sure you prefix your value with "**`java:`**". For example, **`java:`**`dms`, or **`java:`**`/dms`.
dms.database.JNDI.Username	Specify the username you use to connect to the JDNI datasource. Leave it blank if username and password are already defined in the datasource definition.
dms.database.JNDI.Password	Specify the password you use to connect to the JDNI datasource. Leave it blank if username and password are already defined in the datasource definition.



7. Click **Next**.

   Clicking **Next** tests your configuration right away and proceeds to the next page when the configuration is valid, and the new page summarizes the target DMS configuration.

As part of the validation, it tries to create and delete some temporary documents on your new DMS environment.

8. Click **Start Migration** if you are sure you want to migrate the current DMS to the specified target DMS.

   Upon migration start, the DMS Migration Engine Service is enabled and the documents are migrated in batches.

There can be a delay of less than one minute between clicking **Start Migration** and the moment where the document starts to be actually migrated; this is due to the default scheduling of the DMS Migration service, which starts every 30 seconds.

DMS migration in progress

9. After clicking **Start Migration**, the wizard displays the "DMS migration is IN PROGRESS" page.

   While the DMS Migration is in progress, the DMS Migration Engine Service is running in the background to migrate the documents. If a PPM User checks in new documents or edits the existing documents, these documents are also migrated.

   The DMS Migration Engine Service has no impact on the working of the current DMS system. When PPM Users perform DMS actions, such as checking in or out documents, they are working with the current DMS system.

10. Click **Refresh** to update the migration progress status.

The progress bar is not updated automatically. You need to click **Refresh** to update the migration progress status.

The migration status contains the following information:

Item	Description
Status	Status of the migration, shown by a progress bar reflecting the percentage of **Files processed**.
Start time	The migration start time, it is recorded when you click **Start Migration**.
Files processed	The number of the files that have been processed. It represents the number of both **Successful** and **Failed** documents.
Successful	The number of documents that have been migrated successfully.
Failed	The number of documents which migration failed. You can click **Retry failed files** to retry migrating them again once the migration completes.
Files total	The total number of documents in the system.

11. You can also perform the following actions on this page:

    - **Retry failed files:** Once the migration is completed, if there are any files that failed to be migrated, you can click this button to retry to migrate them until they succeed. All failed files will be re-migrated.

      - If there are some failed documents, you need either retry to migrate them until they succeed, or delete them from the system. These failed documents will not be migrated if you go to the next step, and should be considered lost documents once you move to transition period, even if you cancel migration during the transition period.
      - The migration log (`<PPM_Home>/server/<PPM_Instance>/log/dms.log`) contains detailed information about migration operations, activities, status, and issues.
        The `com.kintana.dms` parameter in `logging.conf` specifies logging these information by default. However, you can modify the logging level if needed.

    - **View failed files logs:** View the migration log for a list of failed files. If a file fails to be migrated, the whole exception details are included in the logs. You can search migration logs based on the time the error occurred.

- **Pause** | **Resume:** When migration is under way, you can pause it. If migration is paused, you can resume it.
- **Cancel Migration:** Clicking this button cancels the migration immediately and brings you back to the current DMS Configuration screen. The target DMS environment is left as-is. Documents already migrated to the target DMS system will remain there unless manually removed.

12. When the progress state reaches 100%, click **Refresh**.

    The wizard displays the "DMS Migration is COMPLETED" message.

Once you see the message, make sure that no document is in **Failed** state, as failed documents are not available once you start using the new DMS.

Before moving to the next step (Transition Period), this is a good time to enable full-text search if you plan to use the feature.

If you move to Transition Period without enabling full-text search, the full-text search feature will not be available to PPM Center users and they cannot search documents by **Document Key Words**.

To enable full-text search in PPM Center Database DMS:

a. Create TEXT indexes, as described in *Creating and Maintaining Oracle TEXT Indexes* on page 170.

   Note that this step can take a long time (over 1 hour per 5 GB of documents to index).

b. In PPM Center Administration Console, go to **Application Configuration**, set the parameter `DMS_DB_ENABLE_FULLTEXT_SEARCH` to `true`, and then save the change.

Start DMS Transition

Once the migration is completed, you can move to "Transition Period", during which PPM Center Database DMS becomes active, but your old DMS solution (File System or Documentum) is still active in the background and save copies of newly created documents. This way, you can try PPM Center Database DMS for some time. If you find that the new

DMS solution does not meet your requirements, or if you encounter any issue with the new DMS solution, you can always switch back to the previous DMS solution without causing loss of any documents to PPM Center users.

13. Click **Start Transition**.

    Starting the transition replaces the current DMS solution with the new target DMS solution. It takes a few seconds to a few minutes to complete this switching action, during which the wizard displays a temporary page.

    During the transition, the PPM Center DMS system becomes read-only for a few seconds while the DMS Driver is reloaded on all PPM Server nodes. If PPM users try to add a new document or check in a new version while the system is locked, they receive a message similar to the follows:

    ```
    PPM Document Management System is currently under
    maintenance. Please try again later.
    ```

    For this reason, and to minimize the potential impact on PPM Users, it is recommended to move to transition while the PPM Server system is not under heavy load.

DMS Transition in progress

14. The wizard displays the “Transition” page.

    In the transition stage, your DMS system is already switched to the target DMS system, and all documents in the legacy DMS System were already migrated.

    The DMS Transition period allows you to start using the new DMS solution while the old DMS is still available. PPM Users are performing DMS actions on the target DMS solution, such as check in, check out, and save documents. Meanwhile, any new documents added or modified documents checked in to the new DMS system by PPM users are synchronized back to the old DMS system as well. This way, if you choose to cancel the migration and move back to the legacy DMS solution for any reason, you are not losing any documents changes occurred during in the transition process.

15. Click **Refresh** to update transition synchronization status.

The transition status information includes:

- Transition status
  - Number of Failed documents
- Documents Migration Summary
  - Start time
  - File processed
  - End time

16. You can perform some other actions on this page:

    - **Retry failed files:** Just like during the migration, some files may fail to be synchronized back to the legacy DMS solution. This has no impact if you choose to continue with the new DMS system, but make sure that these documents are synchronized successfully back to the legacy DMS system if you plan to cancel the migration.
    - **View failed files logs:** Errors occurred during synchronization of documents changes are logged along with exception details. Click this button to view detailed log.
    - **Cancel Migration:** Clicking this button during the transition period results in synchronizing any new documents or new versions of documents added or checked in to the new system but not yet synchronized back to the legacy system, and then switching back to the legacy system.

      If PPM Users create and save new entities with attachments in the time lapse between a PPM Center administrator clicking **Cancel Migration** and the completion of the cancellation process, these entities might fail to be created as the DMS is locked during that time window. This is similar to what might happen after the transition period starts.

Commit the migration

17. Click **Commit.**

    By clicking **Commit**, you stop synchronizing new documents to the old DMS. Once you click **Commit**, the DMS Migration Engine Service stops,

you are officially moved to the PPM Center Database DMS, and the old DMS is retired.

- You can stay in Transition period for as long as you feel necessary to ascertain the stability and performance of the new DMS system.
- All error log for failed documents are cleaned once you click **Commit**.
- The DMS Migration Engine Service is disabled automatically after you click **Commit**. Do NOT try to start it manually.
- PPM Center does not delete any of your documents from the old DMS solution (Documentum or File System) after a DMS Migration, you need to manually remove them once the migration is committed.

Migrating from Documentum-Based DMS on PPM Center Version 9.13 or 9.14

You can migrate your current DMS on PPM Center version 9.13 or 9.14 directly to a supported DMS on PPM Center version 9.14.0008.

To migrate from a Documentum-based DMS on PPM Center version 9.13 or 9.14,

1. Fix broken documents (if any).
   - *For DMS based on stand-alone Documentum Content Server*

     Launch the enhanced `kConfig.sh` tool, select the only available option **Integrate PPM Center with EMC Documentum Content Server**, and run the tool.
   - *For DMS based on embedded Documentum Content Server*

     Contact HP Software Support for a tool to fix broken documents. The option for HP version of Documentum DMS is not available in the `kConfig.sh` tool on PPM Center version 9.13 or 9.14.
2. Obtain the DMS hotfix under the following reference from HP Support and deploy it on top of PPM Center version 9.13 or 9.14:

   `HOTFIX_-_DMS_9.13_9.14_-_QCCR1L45846_-_QCCR1L45466`

3. Migrate the Documentum-based DMS to PPM Center Database DMS using the Administrator Console tool DMS Configuration.

   For detailed instructions, see *Migrating DMS Using the Administrator Console Tool* on page 178.

4. Deploy PPM Center version 9.14.0008.

   For detailed instructions, see the *Release Notes for PPM Center version 9.14.0008*.

5. (Optional) Migrate from PPM Center Database DMS to PPM Center File System or PPM Center External Database DMS.

   For detailed instructions, see *Migrating DMS Using the Administrator Console Tool* on page 178.

6. (Optional) Enable full text search functionality if you use PPM Center Database DMS or PPM Center External Database DMS.

   For detailed instructions, see *Configuring Full Text Search in Database-Based DMS Solutions* on page 166.

Upgrading and Migrating from Documentum-Based DMS on PPM Center Version 9.12 or Earlier

This section provides detailed instructions on how to upgrade and migrate a Documentum-based DMS solution on PPM Center version 9.12 or earlier to PPM Center Database DMS on PPM Center version 9.14.0008.

Make sure you read carefully the *Special Notes When Documentum is the Current DMS* on page 180.

Documentum-based DMS solutions are not available as target DMS options in PPM Center version 9.14.0008, and the PPM Center External Database DMS solution is only available in PPM Center version 9.14.0008. Therefore, if you want to maintain all your documents and their properties information, make sure you migrate your Documentum-based DMS solution to PPM Center Database DMS before you deploy PPM Center version 9.14.0008.

Once you are on PPM Center Database DMS, you can use the Administration Console tool DMS Configuration to easily migrate the current DMS to PPM Center File System or PPM Center External Database DMS. For more information, see *Migrating DMS Using the Administrator Console Tool on page 178*.

To migrate your Documentum-based DMS on PPM Center version 9.12 or earlier to PPM Center Database DMS on PPM Center version 9.14.0008,

1. (DMS based on embedded Documentum Content Server only) Run the PPM Center server configuration utility (the `kConfig.sh` script) to verify that the integration works fine.
2. (PPM Center version 7.5 only) Upgrade to PPM Center version 8.00.

   For detailed instructions, see the *Upgrade Guide* for PPM Center version 8.00.
3. (Documentum Content Server version 5.3 only) Upgrade the embedded or stand-alone Documentum Content Server from version 5.3 to version 6.5.

   If you have Documentum Content Server version 5.3 software in your system, contact HP Software Support Web site (hp.com/go/hpsoftwaresupport) for assistance with upgrading.

   For more information, see the *Document Management Guide and Reference* for PPM Center version 9.10 or earlier.
4. Run `kConfig.sh` to upgrade the Documentum Content Server 6.5 software to version 6.5 SP2.

   For detailed instructions, see the *Document Management Guide and Reference* for PPM Center version 9.10 or earlier.
5. Upgrade PPM Center to version 9.10, then version 9.14.

   For detailed instructions, see the *Upgrade Guide* for PPM Center version 9.10 and *Release Notes* for PPM Center version 9.14.
6. Obtain the hotfix under the following reference from HP Support and deploy it on top of PPM Center version 9.14:

   `HOTFIX_-_DMS_9.13_9.14_-_QCCR1L45846_-_QCCR1L45466`

7. Fix broken documents in Documentum-based DMS.

   - *For DMS based on embedded Documentum Content Server*

     i. Run the `kConfig.sh` script to verify that the integration works fine.

     ii. Contact HP Software Support for a tool to fix broken documents (if any).

   - *For DMS based on stand-alone Documentum Content Server*

     Launch the `kConfig.sh` tool, select the **Integrate PPM Center with EMC Documentum Content Server** option, and run the tool to fix broken documents in one run.

8. Migrate the Documentum-based DMS to PPM Center Database DMS using the Administrator Console tool DMS Configuration in PPM Center 9.14.

   For step-by-step instructions on how to migrate your DMS, see *Migrating DMS Using the Administrator Console Tool* on page 178.

   Documentum-based DMS solutions are not available in PPM Center version 9.14.0008. Therefore, you need to migrate your Documentum-based DMS to PPM Center Database DMS before you deploy PPM Center version 9.14.0008.

9. Deploy PPM Center version 9.14.0008.

   For detailed instructions, see the *Release Notes for PPM Center version 9.14.0008*.

10. (Optional) Migrate from PPM Center Database DMS to PPM Center File System or PPM Center External Database DMS.

    For detailed instructions, see *Migrating DMS Using the Administrator Console Tool* on page 178.

11. (Optional) Enable full text search functionality if you use PPM Center Database DMS or PPM Center External Database DMS.

    For detailed instructions, see *Configuring Full Text Search in Database-Based DMS Solutions* on page 166.

10 What Document Management Users Need to Know

About this Chapter

This chapter provides the basic information PPM Center users need to know about HP document management and how to use it. The following sections include information about how to:

- Attach files to PPM Center entities with document management in place
- Edit document attachment information
- Check documents in and out
- Search for entities based on keywords specified for documents

Final section describes for PPM Center attachments are organized in the Content Server repository, and how you can access them through Content Server.

Attaching Documents to PPM Center Entities

This section contains the procedure to use to attach documents to a PPM Center entity such as a request or a project, in a PPM Center instance containing the document management module.

The following sections provide instructions on how to: attach documents to an entity in one of following ways:

- Attach a document to a user data field of an entity (for which one or more user data fields have been created).
- Attach a document as a reference to any entity that supports references.

Due to a third-party product limitation, you can not attach documents to PPM Center entities while PPM Center Database DMS full text index creation is in progress. If you do so, you may receive an error message.

Attaching Documents to User Data Fields

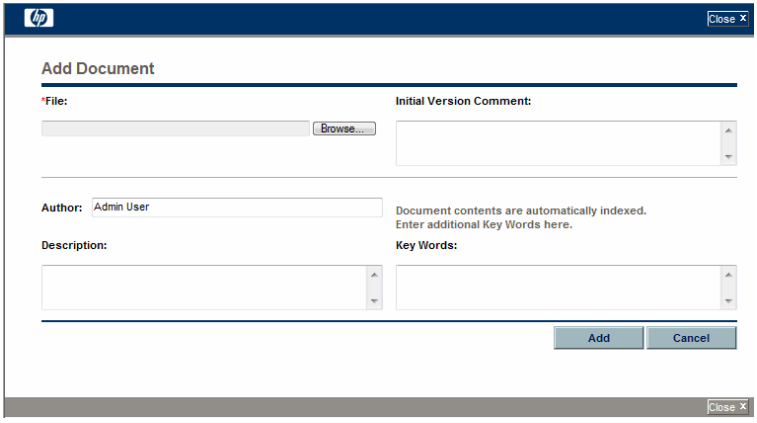
User data fields are customized fields that you can create to capture information about a PPM Center entity that is not captured by standard fields. If a user data field for an entity has a validation value set to Attachment, then users can attach documents to that field.

For information on how to create user data fields, see the *HP Demand Management Configuration Guide*.

To add an attachment to a user data field:

1. Log on to PPM Center and open or create an entity that has a user data field to which you want to attach a document.
2. In the attachment section for the user field, click **Add.**

   The Add Document window opens.



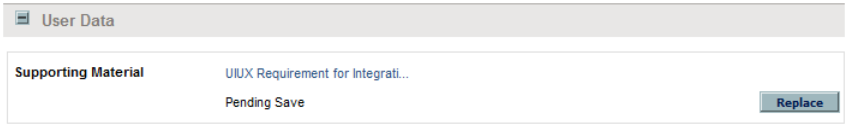
3. In the **File** field, type the full directory path of the file to attach. Alternatively, you can click **Browse,** and then navigate to and select the file.

The file you specify must reside in a directory on the HP Project and Portfolio Management Center server.

4. (Optional) Provide information for the boxes listed in the following table.

Box	Description
Initial Version Comment	Type notes on the initial version of the document you are attaching.
Author	Type the name of the document author or authors.
Description	Type a description of the document and its purpose.
Key Words	Type keywords to add to an index of document contents. The keywords you add to attachments help users search for entities with attachments that contain those words. **(Documentum only)** Because Content Server's fulltext indexing automatically indexes the contents of text-based files, there is no need to specify keywords for text-based documents. However, users cannot search non-text attachments such as image files unless you specify keywords. For information about the fulltext indexing feature, see the *EMC Documentum Fulltext Indexing System Installation and Administration Guide.* **(Database-based DMS solutions only)** Note that users cannot search non-text attachments such as image files unless you specify keywords. For information about fulltext indexing, see *Configuring Full Text Search in Database-Based DMS Solutions* on page 166.

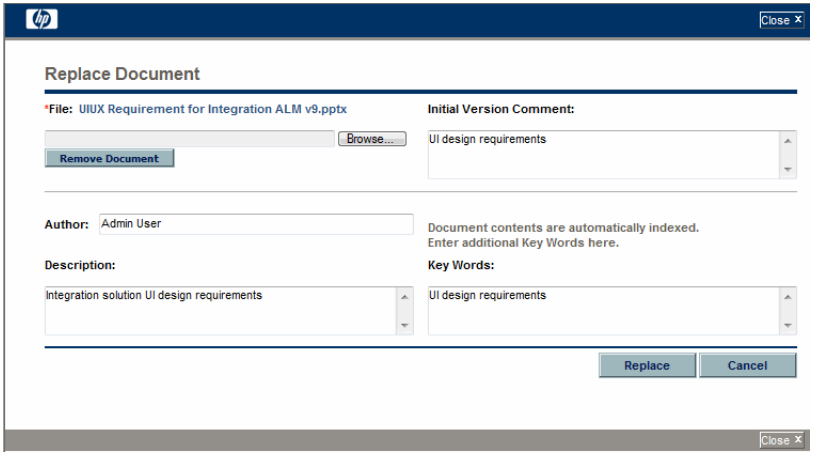
5. Click **Add.**



The document is attached and is now listed in the **User Data** section of the entity page.

6. (Optional) You can replace or remove the document you just uploaded. To do so, click **Replace**.

The Replace Document window opens.



- To remove the document, simply click **Remove Document** and then click **OK** when prompted.
- To replace the document,
  i. In the **File** field, type the full directory path of the file to attach. Alternatively, you can click **Browse,** and then navigate to and select the file.
  ii. Provide information in other fields as necessary.
  iii. Click **Replace**.

7. Click **Save** on the entity page.

The document is loaded into the document management system.

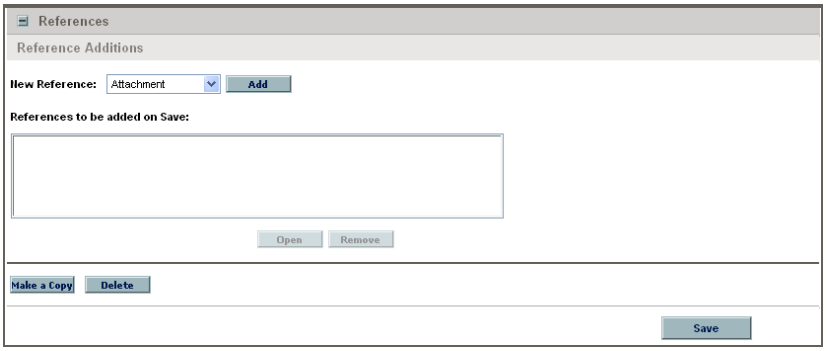
Adding a Document as a Reference

To attach a document to an entity that supports references:

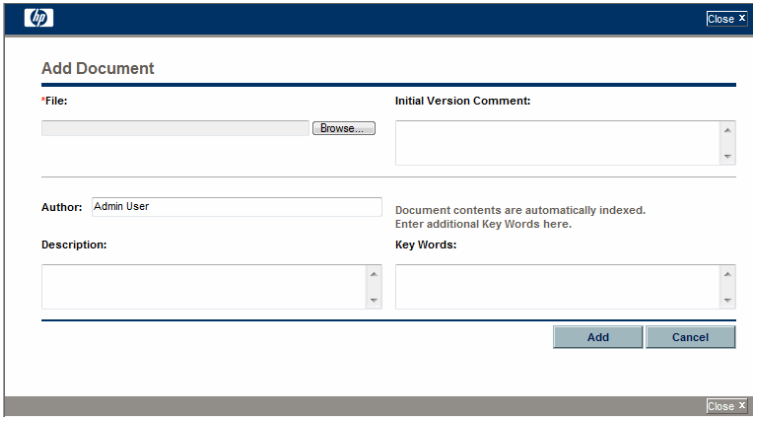
1. From the standard interface, open the entity to which you want to attach a document.

   You can also attach a document to an entity that you are creating and have not yet submitted.

2. At the bottom of the page, expand the **References** section.



3. In the **New Reference** list, leave **Attachment** selected.
4. Click **Add.**



The Add Document window opens.

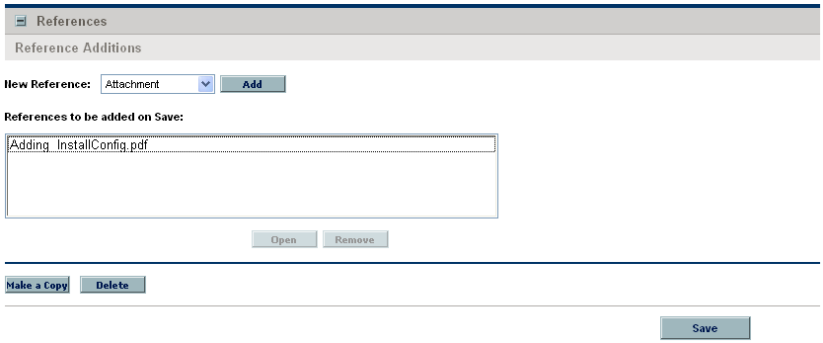
5. In the **File** field, type the full directory path of the file to attach. Alternatively, you can click **Browse,** and then navigate to and select the file.

The file you specify must reside in a directory on the HP Project and Portfolio Management Center server.

6. (Optional) Provide information for the boxes listed in the following table.

Box	Description
Initial Version Comment	Type notes on the initial version of the document you are attaching
Author	Type the name of the document author or authors
Description	Type a description of the document and its purpose.
Key Words	Type keywords to add to an index of document contents. The keywords you add to attachments help users search for entities with attachments that contain those words. Because Content Server's fulltext indexing automatically indexes the contents of text-based files, there is no need to specify keywords for text-based documents. However, users cannot search non-text attachments such as image files unless you specify keywords. For information about the fulltext indexing feature, see the *EMC Documentum Fulltext Indexing System Installation and Administration Guide.*

7. Click **Add.**



The **References to be added on Save** field lists the document file you specified.

8. Click **Save.**

The document, which was loaded into the document management system after you clicked **Save,** is now listed in the **Attached Documents** section of the entity page.

The information displayed for the attached document also includes:

- Document version, size, and author
- Who (if anyone) has the document checked out
- When and by whom the document was last checked in

If PPM Center is running, and Content Server stops, users can continue to use PPM Center, but cannot add or access attachments until Content Server is up and running again.

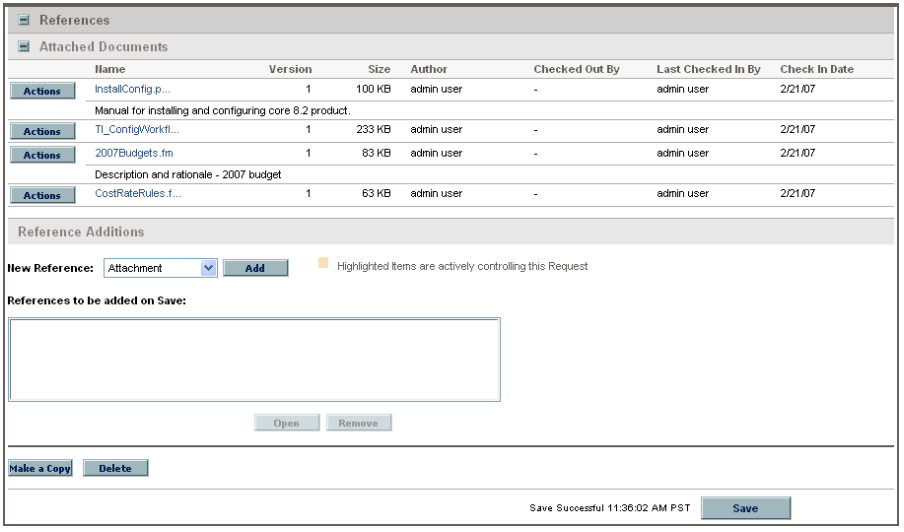
Any errors that occur while the PPM Server communicates with Content Server are recorded in a log file. Server log files are stored in the `<PPM_Home>/server/kintana/log` directory. Server log files are named `serverLog.txt` and `serverLog_timestamp.txt`.

Active PPM Servers log output to the `serverLog.txt` file. The `serverLog_timestamp` files are archived versions of the `serverLog.txt` file. For more information about PPM Server log files, see the *Installation and Administration Guide*.

Editing Document Attachment Information

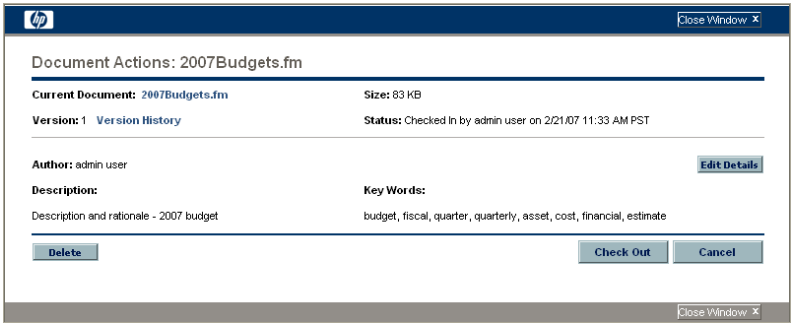
To edit document attachment information from the **References** section of an entity page:

1. In the standard interface, on an entity page, expand the **References** section.

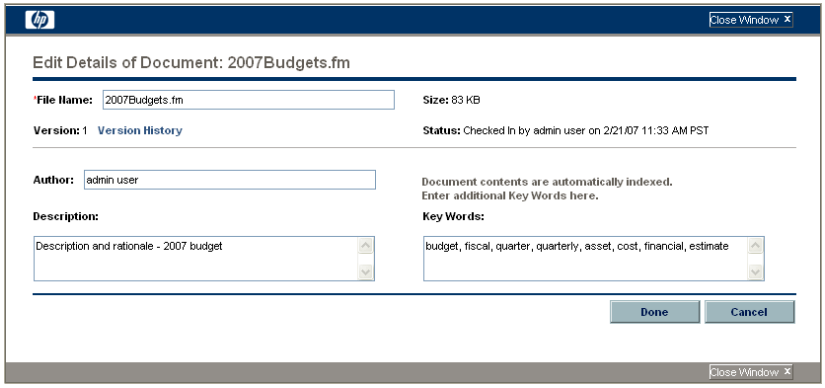


2. Under **Attached Documents,** to the left of the name of the document that has associated attachment information you want to edit, click **Actions.**

   The Document Actions window opens. From this window, you can view document information, open the Edit Details window, check out the document, or remove the document from the **Attached Documents** section.



3. Click **Edit Details.**



   The Edit Details of Document window opens. You can use this window to change descriptive information about the document.

4. Make the required changes to the document information.

Checking Attached Documents Out and In

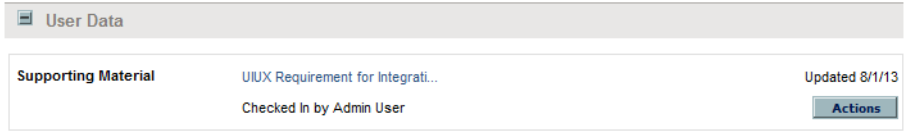
To check an attached document in or out, use one of the following methods:

- If the entity has a custom attachment field, use that field to check the document in or out.
- Use the **References** section of the entity page.

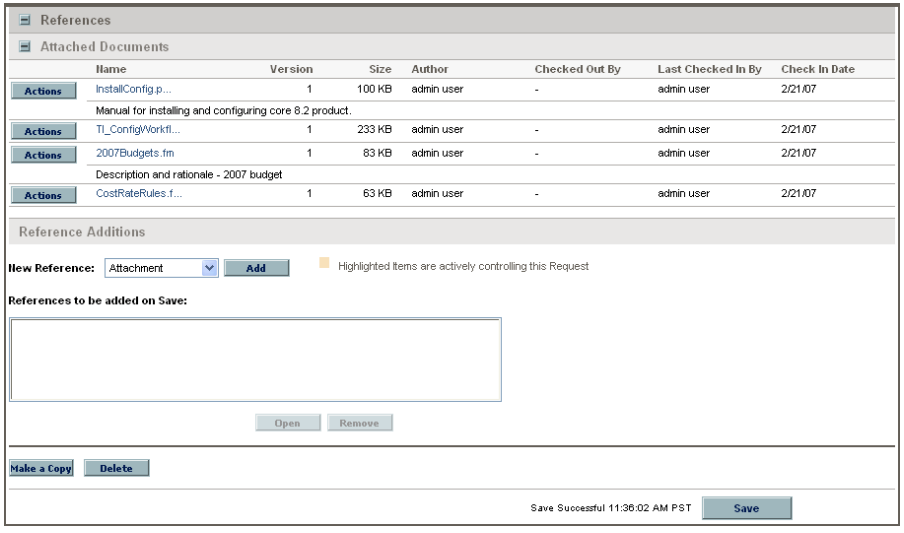
Checking a Document Out and In from the References Section

To check out an attached document, edit it, and check it back in:

1. In the standard interface, on an entity page,
   - Expand the user field section.

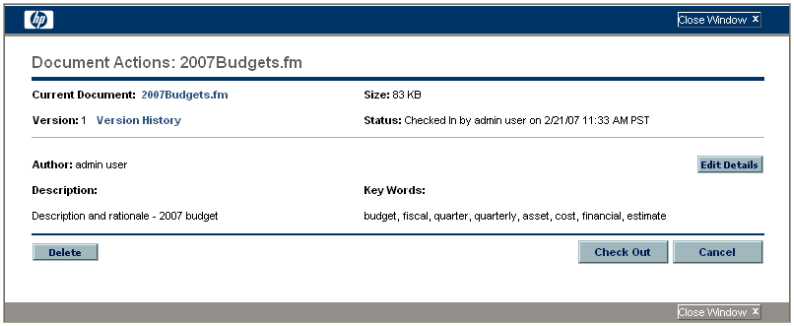


   - Expand the **References** section, then expand the **Attached Documents** section.



2. Click the **Actions** button for the document that you want to check out.

   The Document Actions window opens.

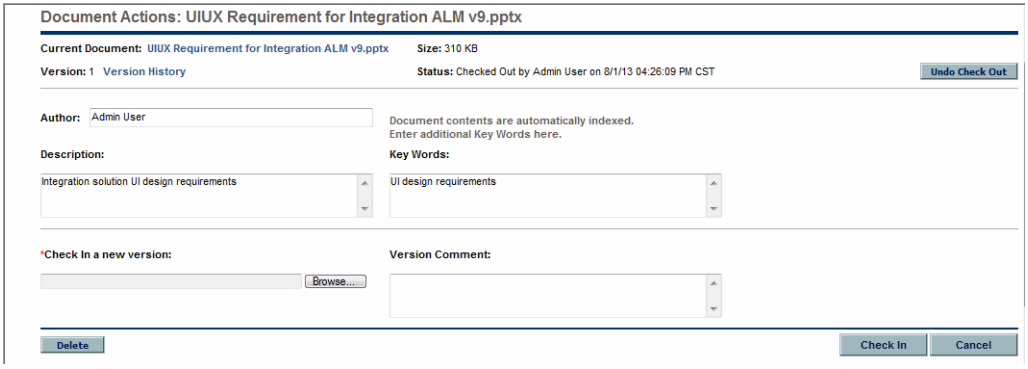


3. Click **Check Out.**

   The document opens for editing or saving, and the Document Actions window closes.

4. After you finish making changes, save and close the document.

   The Document Actions window now displays the **Check in** button.



5. Click **Check In.**

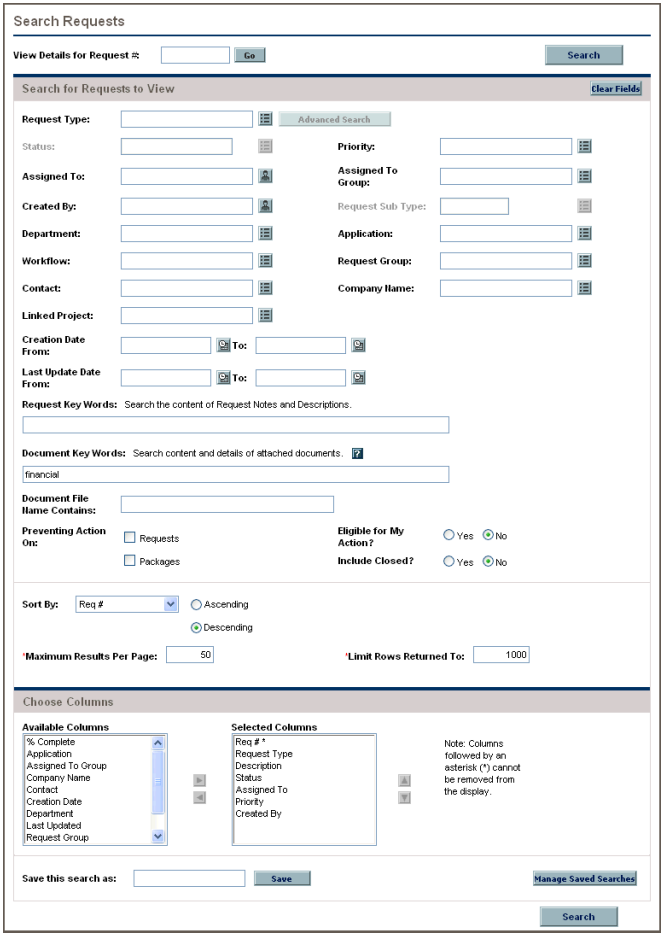
   Note that, in the **References Added** section of the entity page, the document version number displayed has increased by one.

Searching for Entities by Document Key Word

In the PPM Center standard interface, you can search for entities based on key words in referenced documents. Content Server searches the descriptive fields for the document (author, description, title, and key words) and document content. The descriptive field searches are relevant to all text and binary documents. Content searches are relevant only to text-based documents.

To search for an entity using document key words:

1. Open a page for an entity that supports document management.



2. In the **Document Key Words** box, type one or more words, separated by spaces, to use as search criteria.

Keyword searches are not case-sensitive.

The ***<Entity_Name>*** **Search Results** section lists only attached documents that include all of your search terms. For example, a search for "development test" is treated as "development" and "test." A document must have both "development" and "test" in its content or its descriptive fields to qualify as a match. To search for documents that contain either "development" or "test," type **`development OR test.`**

For information about other ways to specify search terms, see *Specifying Search Terms*.

3. Scroll to the bottom of the entity page and click **Search.**

The search returns a list of all entities (of the selected type) that have one or more attached documents containing key words that match your search terms. A document that you just attached may not show up on the Search Results page for several minutes. Before a content search can find a document, the document content must first be indexed. Although indexing is automatic, the process is periodic, and so may require several minutes to complete.

Specifying Search Terms

In addition to searches based on the AND and OR operators, you can search for exact phrases, exclude documents based on a key word, or search by combining queries. This section provides information on how to specify the key words for these search types.

Searching by Phrase

To search for an exact phrase, type double quotation marks ("key words") at either end of the phrase. Content Server returns a list of entities with attached documents that include all of the words inside the quotation marks, in the same order as you typed them.

Excluding Documents that Contain a Specific Text String

To exclude documents that contain a particular key word, type a minus character (-) in front of the key word. For example, to include documents with "development" or "test," but not those with "production," type **`development OR test -production.`**

Supported Querying

The document management index server software supports the following queries:

- The DQL SEARCH DOCUMENT CONTAINS clause
- The following DQL WHERE clauses:
  - String data types =, !=, like
  - Boolean data types =, !=
  - Integer, double, and date data types =, !=, <, >, <=, >=
  - id data types =, !=
  - The FOLDER clause, including DESCEND
  - LIKE clauses, including wildcard support

The following are not supported:

- Zone searching
- Chunked XML documents
- Grammatical normalization (lemmatization)

  For example, searching for "car" does not return "cars."
- Wild card searches do not return matches when there is a space in the result.

Tokens Associated with Document Management

Table 10-1 lists the tokens related to document management. You can use these tokens to reference documents, version history, and metadata. Except for `DOC_HISTORY`, these tokens are also valid in systems without document management.

These tokens only work for custom fields, and not for reference attachments. These tokens do not support client-side token parsing.

Table 10-1. Tokens associated with document management

Token	Description
DOC_LINK	Resolves to a URL that, when clicked, opens the latest version of the document. Forces user authentication before delivering the document.
DOC_HISTORY	Resolves to a URL that, when clicked, displays a view of the document's version history. Forces user authentication before delivering the information.
AUTHOR	Resolves to the author descriptive field stored with the document.
DESCRIPTION	Resolves to the descriptive field stored with the document.
LAST_CHECK_IN_DATE	Resolves to the timestamp of the last check-in.
LAST_CHECKED_IN_BY_NAME	Resolves to the full name of the PPM Center user who added or last checked in the document.
LAST_CHECKED_IN_BY	Resolves to the ID of the PPM Center user who added or last checked in the document.

For more information about tokens and how to use them, see *Commands, Tokens, and Validations Guide and Reference.*

PPM Center Documents in the Content Server Repository

This section provides information about how the documents associated with PPM Center entities are organized and accessed in the Content Server repository.

Organization of PPM Center Attachments with Document Management

This section addresses how the files you attach to PPM Center entities are organized in Documentum Content Server (embedded or stand-alone instance) after you enable and start using HP document management.

If your document management implementation is based on embedded Content Server software provided with PPM Center, see your PPM Center administrator for information about the tools available for viewing the Content Server repository contents.

If you have the required permissions, you can use a program like Webtop or the EMC Documentum Repository Interrogation Utility (RepoInt) to access documents attached to PPM Center entities in the Content Server repository.

Figure 10-1 and *Figure 10-2* show the folder organization in a Content Server repository after PPM Center is configured with Content Server (displayed in EMC RepoInt). Organization of attachment folders in the Content Server repository.

Figure 10-1. PPM Center attachment file folders in the Content Center repository

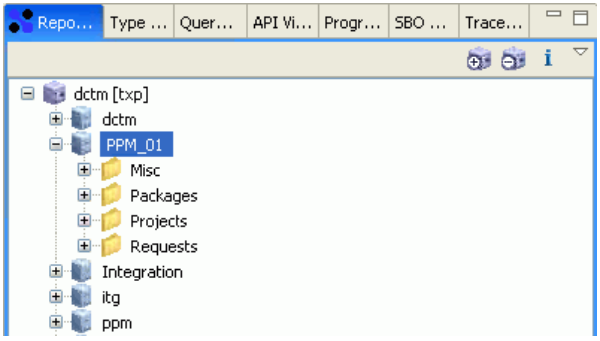
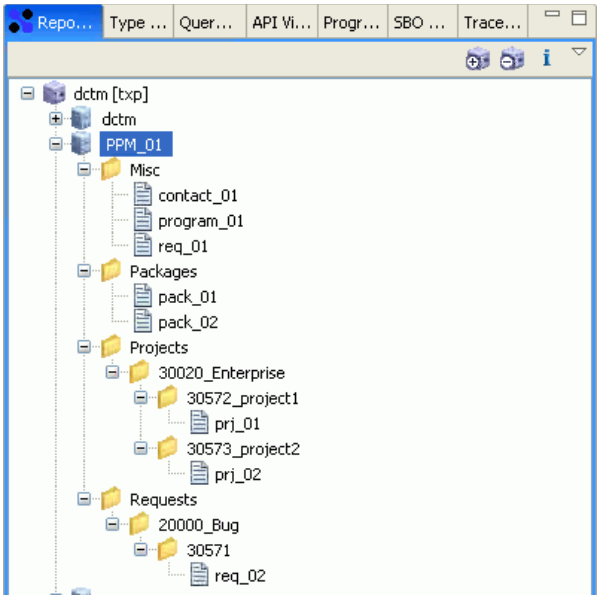


Figure 10-2. Expanded attachment folders in the Content Server repository



In the example repository shown in *Figure 10-1* and *Figure 10-2*, "PPM_01" is the name of the repository used to store PPM Center attachments. The repository name is provided by the administrator during the process of configuring PPM Center with Content Server (see step 12 on page 150).

During integration, the configuration utility creates the following folders within the cabinet:

- **Packages.** Files attached to packages through user data fields or as references are stored in this folder.
- **Projects.** Files attached to projects through user data fields or as references are stored in this folder. The first time a user attaches a document to a project of a given type, a subfolder is created for that project type in the **Projects** folder.

Each time a user attaches a document to a project of a given type, a subfolder is created for that project in the folder for that project type. The attachments are stored in the folders for the individual projects.

If you rename a PPM Center project or project type, the Synchronize Documentum Folder/Security Group Name background service automatically renames the associated folders and security groups (if enabled). There is no need to make any changes in Content Server.

- **Requests.** Files attached to requests through user data fields or as references are stored in this folder. The first time you attach a document to a request of given type in PPM Center, a subfolder for that request type is created in the **Requests** folder in the repository.

  Each time you attach a document to a request of a given type, a subfolder is created for that request in the folder for the request type. The attachments are stored in the folders for the individual requests, which are arranged based on their request number in PPM Center.

- **Misc.** Attachments associated with entities other than packages, projects, and requests, such as contacts and programs, are stored in this folder.

Accessing PPM Center Attachments through Content Server

Once document management is in place, the following Documentum groups exist in Content Server:

- Projects
- Packages
- Requests
- Misc

Each of these groups corresponds to one of the folders created in the PPM Center cabinet (a container used to store attachments). In addition to these four groups, additional groups are created for each project type, request type, project, and request.

If your administrator has assigned you to the Documentum group associated with a given project folder, request folder, package folder, you have access to the attached documents through Content Server.

If PPM Center is integrated with a stand-alone instance of Content Server EE (rather than with the embedded Content Server components that HP supplies), and your PPM Center administrator has configured the system to create Content Server users automatically whenever new PPM Center users are created, you can attach documents to entities in PPM Center. If your administrator has not configured the system to create Content Server users automatically, a Content Server EE account must be created for you.

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