

Course Guide

IBM FileNet Content Manager 5.2.1: Build a FileNet Content Repository

Course code F281 ERC 1.0



April 2016 edition

Notices

This information was developed for products and services offered in the US.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

*IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
United States of America*

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you provide in any way it believes appropriate without incurring any obligation to you.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to actual people or business enterprises is entirely coincidental.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml.

© Copyright International Business Machines Corporation 2016.

This document may not be reproduced in whole or in part without the prior written permission of IBM.

US Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Trademarks	v
Course description	vi
Agenda	vii
Unit 1. Build a FileNet Content Repository	1-1
Unit objectives	1-2
What is an Object Store?	1-3
Object store database	1-4
What is a database connection object?	1-6
Object store and database connectivity	1-7
Object Store creation overview	1-8
What is IBM FileNet Configuration Manager?	1-9
Testing JDBC Data Sources	1-10
Sharing Database Connections	1-11
Prepare to Create an Object Store	1-13
Add-ons for an Object Store	1-15
IBM Content Navigator	1-18
Instructor demonstration	1-20
Unit summary	1-21
Exercise: Build a FileNet Content Repository	1-22
Exercise objectives	1-23
Unit 2. Work with storage areas	2-1
Unit objectives	2-2
What is a storage area?	2-3
Storage area options	2-5
Resource statuses of File Storage Area	2-7
Database storage areas	2-9
File Storage Area	2-10
File Storage Area Directory Structure	2-12
File storage area size control options	2-13
File storage area security	2-15
Fixed storage areas	2-17
Advanced storage areas	2-18
Advanced storage area features	2-20
Replicas	2-22
Synchronous and asynchronous replication, common use case	2-24
What is a storage policy?	2-25
Use Storage policies to distribute the content	2-27
Instructor demonstration	2-28
Unit summary	2-29
Review questions	2-30
Review questions	2-31
Review questions	2-32
Review answers	2-33
Review answers	2-34
Review answers	2-35
Exercise: Work with storage areas	2-36

Exercise objectives	2-37
---------------------------	------

Trademarks

The reader should recognize that the following terms, which appear in the content of this training document, are official trademarks of IBM or other companies:

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide.

The following are trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide:

AIX®	DB2®	FileNet®
System Storage®	System z®	Tivoli®
WebSphere®	z/OS®	

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

Java™ and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other product and service names might be trademarks of IBM or other companies.

Course description

IBM FileNet Content Manager 5.2.1: Build a FileNet Content Repository

Duration: 1 day

Purpose

Learn how to build a FileNet Content Repository for a FileNet Content Manager 5.2.1 system. You learn about creating object stores, file storage areas, and file storage policies.

Audience

This course is intended for system administrators and solution builders.

Prerequisites

- F270 – IBM Content Navigator 2.0.3.6: Introduction or equivalent knowledge.
- F280 – IBM FileNet Content Manager 5.2.1: Introduction or equivalent knowledge. High level understanding of the P8 architecture.
- P8 terminology, including: Content Platform Engine, IBM Content Navigator, object stores, objects, Content Services, Process Services.
- Using IBM Content Navigator to work with content.
- Configuring desktops in IBM Content Navigator.
- Using Administration Console for Content Platform Engine.

Objectives

- Use System Configuration Tool to create JDBC data sources for an object store.
- Create an object store.
- Add the object store as a repository to IBM Content Navigator.
- Identify types of content storage areas.
- Create a file storage area.
- Create a file storage policy.

Contents

- Create an object store.
- Work with file storage areas.

Agenda

**Note**

The following unit and exercise durations are estimates, and might not reflect every class experience.

Day 1

- (00:15) Course introduction
- (00:30) Unit 1. Build an object store
- (00:30) Exercise 1. Exercise title
- (00:45) Unit 2. Work with storage areas
- (00:30) Exercise 2. Work with storage areas

Unit 1. Build a FileNet Content Repository

Estimated time

00:30

Overview

In this unit, you create the JDBC data sources for a new object store. You then create an object store. Finally, you add the object store to an IBM Content Navigator desktop.

How you will check your progress

- Complete the lesson exercises.

References

Knowledge Center URL:

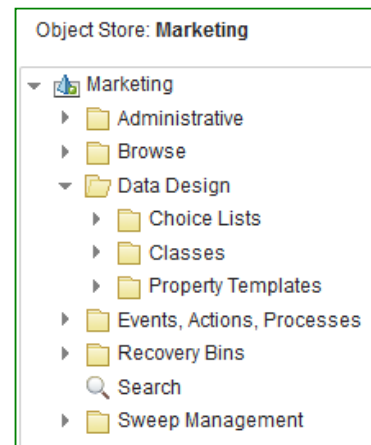
<http://www.ibm.com/support/knowledgecenter>

Unit objectives

- Create JDBC data sources
- Create an object store
- Add an object store as a repository to an IBM Content Navigator desktop

What is an Object Store?

- A repository for storing objects
 - Object metadata is in a database.
 - Content can be stored in the database or it can be stored in storage areas:
 - File storage area
 - Fixed storage area
 - Advanced storage area
 - Content cache area
- Sample tasks that are done in an object store:
 - Configure security and storage policies.
 - Create objects to store data.
 - Configure events and processes.
 - Browse to the objects.
 - Search for documents and folders.
 - Manage Sweeps.
 - Configure Index.



Build a FileNet Content Repository

© Copyright IBM Corporation 2016

Figure 1-2. What is an Object Store?

The screen capture shows the object store and its sub nodes in the Administration Console for Content Platform Engine.

An object store can have one database store, and zero or storage areas.

Object store database

- Object stores can share a database, but they must use separate schemas.
- If you require a separate database, a database administrator can create one that meets the documented requirements.
 - Example: DB2 for Linux, UNIX, and Windows server
 - Use SERVER authentication.
 - Set the DB2 code set to UTF-8.
 - Set the page size to 32 KB.
- See IBM Knowledge Center for database requirements:
 - Microsoft SQL
 - Oracle
 - DB2 for z/OS
 - DB2 for Linux, UNIX, and Windows server
- GCD database
 - Contains domain configuration properties
 - Not usually shared with object stores

Figure 1-3. Object store database

Help paths

FileNet P8 Platform 5.2.1>Planning and preparing>Planning and preparing for FileNet P8 installation>Performing the required installation preparation tasks>Database administrator installation tasks>Preparing Microsoft SQL Server>Verifying that Microsoft SQL Server is ready for FileNet P8>Creating a Microsoft SQL Server database for an object store

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.planprepare.doc/p8ppi023.htm

FileNet P8 Platform 5.2.1>Planning and preparing>Planning and preparing for FileNet P8 installation>Performing the required installation preparation tasks>Database administrator installation tasks>Preparing Oracle server>Verifying that Oracle server is installed for FileNet P8>Creating Oracle table spaces for a Content Platform Engine object store

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.planprepare.doc/p8ppi120.htm

FileNet P8 Platform 5.2.1>Planning and preparing>Planning and preparing for FileNet P8 installation>Performing the required installation preparation tasks>Database administrator installation tasks>Preparing the DB2 for Linux, UNIX and Windows server>DB2 for Linux, UNIX and Windows database planning

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.planprepare.doc/p8ppi259.htm

FileNet P8 Platform 5.2.1>Planning and preparing>Planning and preparing for FileNet P8 installation>Performing the required installation preparation tasks>Database administrator installation tasks>Preparing DB2 for z/OS servers

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.planprepare.doc/p8ppi092.htm

In a shared configuration, multiple FileNet P8 components can store their data in a single database. They must use separate schemas. Most components allow for data to be collocated. However, it is often useful to keep some components in dedicated table spaces:

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

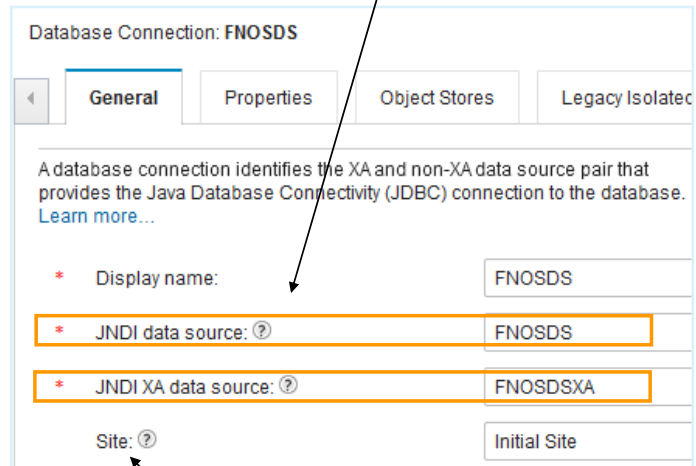
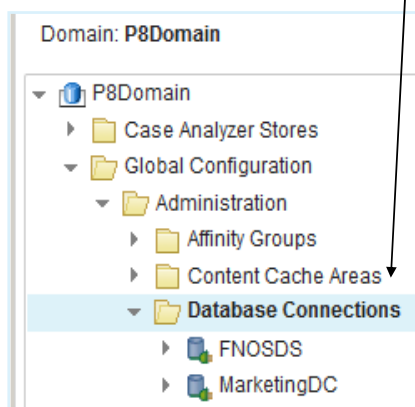
The Global Configuration Database (GCD) contains definitions of the common set of attributes that control functional characteristics of the collection of resources and services for the FileNet P8 domain it represents. It provides general, hierarchical object storage and contains bootstrapping data and global configuration information for the FileNet P8 domain. The GCD defines domain resources, such as sites (and their related virtual servers and server instances), object store databases, full-text index areas, fixed content storage areas, content cache areas, AddOns, marking sets, and other data.

On DB2 and SQL Server, it is not recommended to share the GCD database.

What is a database connection object?

A database connection identifies the data source pair that provides the Java Database Connectivity to the database.

Create a database connection in Administration Console for Content Platform Engine.



It is specific to a site.

Build a FileNet Content Repository

© Copyright IBM Corporation 2016

Figure 1-4. What is a database connection object?

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Sharing data sources>Database connections

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcb029.htm

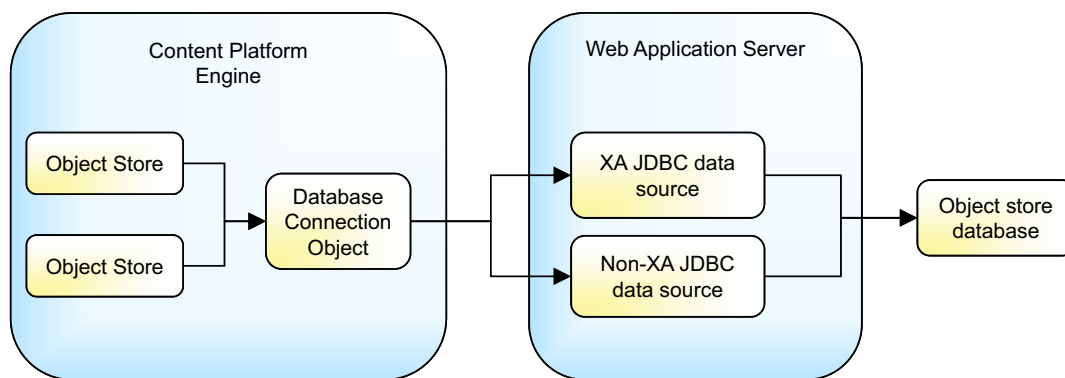
The screen captures show the database connection details in the Administration Console for Content Platform Engine.

A database connection identifies the XA and non-XA data source pair that provides the Java™ Database Connectivity (JDBC) connection to the database. Object stores and isolated regions can share a database by using a single database connection.

A database connection is specific to a site. When you create an object store or an isolated region for the site, you associate it with a database connection. To share a database, you assign the same database connection to one or more object stores or isolated regions.

Object store and database connectivity

- The JDBC data source information is used by Content Platform Engine to connect to global configuration database (GCD) and object store databases.
- You must configure two JDBC data sources for each database connection object.
 - XA
 - Non-XA



Build a FileNet Content Repository

© Copyright IBM Corporation 2016

Figure 1-5. Object store and database connectivity

The content of an object in the object store can be stored in the database or in a storage area. However, the metadata for the object is stored in the database. An object store must have a database connection to function.

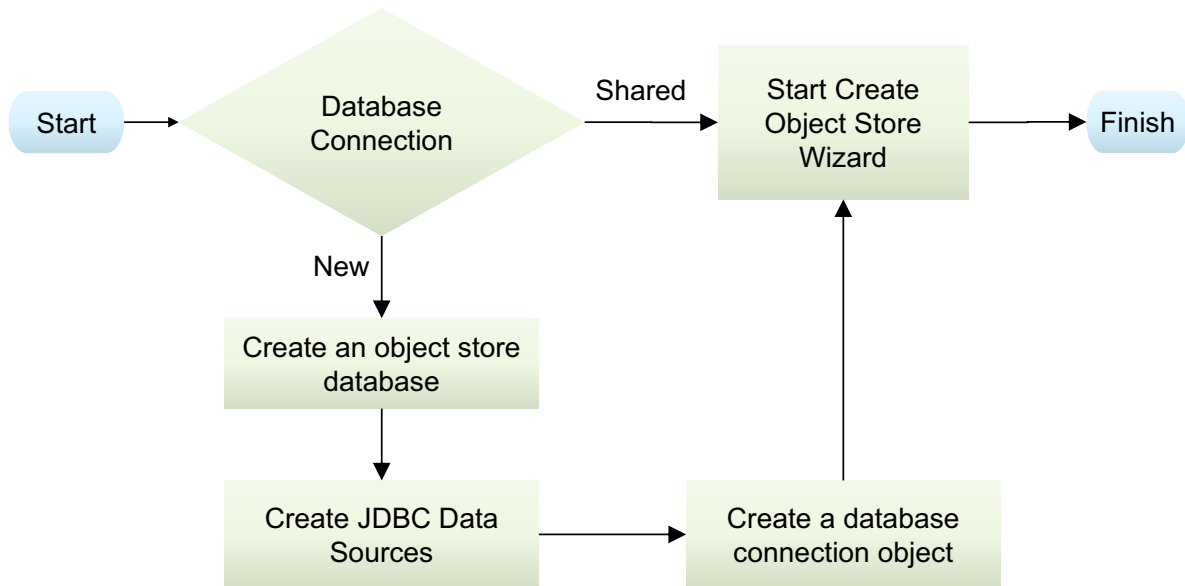
The connection to the database is made by a Database Connection Object, which you configure by using the Administration Console for Content Platform Engine.

The Database Connection Object uses the XA and non-XA data source connections to connect to the object store database.

- XA is an industry-wide standard for transactions that involve multiple resources. For example, transactions that use multiple databases or JMS queues. Operations can affect multiple resources, and when a change is committed, the results are committed across all of the resources. The Content Platform Engine uses the XA data sources for all create, update, and delete operations because of their rollback and timeout features.
- Non-XA transactions have no transaction coordinator, so they are used with a single resource, for example, a single database. The Content Platform Engine uses non-XA data sources for search and retrieve operations because these operations do not modify data, so rollback features are not needed.

An object store requires a connection object that has both XA and non-XA data sources defined.

Object Store creation overview



Build a FileNet Content Repository

© Copyright IBM Corporation 2016

Figure 1-6. Object Store creation overview

The diagram shows the general process for creating an object store. If a database connection exists, and it can be shared with the new database, then you can create the object store immediately. Otherwise, you must first create the data sources and the database connection object.

What is IBM FileNet Configuration Manager?

- IBM FileNet Configuration Manager is a tool that automates IBM FileNet Content Manager configuration tasks.
- Used for configuring FileNet P8 settings:
 - Data sources that are required for object stores.
 - JDBC connections
 - LDAP connections
 - Bootstrap properties
- You can use Configuration Manager to generate one or more unique Content Platform Engine configuration profiles.
 - A profile is a collection of information that is required to configure and deploy new or upgraded Content Platform Engine instances.
 - Example: **CEConfig.cfgp**
 - You can use profiles as templates for configuration.

Figure 1-7. What is IBM FileNet Configuration Manager?

Help path

FileNet P8 Platform 5.2.1>Installing or upgrading>Configuration Manager reference>Overview of Configuration Manager

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.install.doc/p8pia002.htm

Although you can use Configuration Manager to create the JDBC data sources, an application server administrator can create the data sources by using server administration tools.

The information for a profile is collected in XML files in the form of properties and values that describe the associated configuration and deployment tasks. You must provide values for the profile properties that are specific to each configuration at your site, such as the application server name.

The XML files are stored in a directory that is unique to a profile. Because the profile name is used for both the directory name and the configuration file name, you must provide a profile name that is a valid directory name for your operating system. By default, the profiles are stored in the `ce_install_path/tools/configure/profiles` directory, where `ce_install_path` is the location where Content Platform Engine is installed.

Testing JDBC Data Sources

- Use the WebSphere Application Server administrative console
`http://<ServerName>:9043/ibm/console/logon.jsp`
 - Resources > JDBC > Data sources

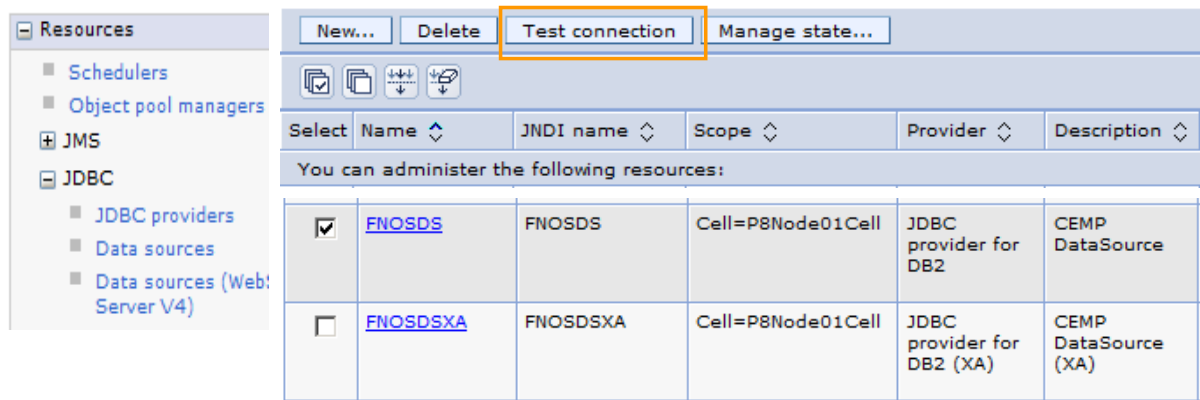


Figure 1-8. Testing JDBC Data Sources

The screen capture shows the WebSphere JDBC data resources page.

As a precaution, test the JDBC data sources after you create them. In this course, you use the IBM WebSphere Application Server Administrative Console to test JDBC data sources.

Sharing Database Connections

Multiple object stores or isolated regions in a single database can share a database connection.

• Benefits

- Reduces the application server administrative load.
- Reduces the database administrator load.
- Requires fewer data sources and database connections.
- Provides a way to create new object stores without the intervention of the Database Administrator and the Application Server Administrator.

Database Connection: FNO SDS

General	Properties	Object Stores
Name	Database Schema Name	
LoanProcess	LoanProcess	
LoanProcessQA	LoanProcessQA	
P8ConfigObjectStore	OSDBUSER	
Sales	Sales	
SalesQA	SalesQA	
SalesSBx	SalesSBx	

Each object store uses a unique schema name.

Build a FileNet Content Repository

© Copyright IBM Corporation 2016

Figure 1-9. Sharing Database Connections

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Sharing data sources>Guidelines for sharing database connections

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcb030.htm

The screen capture shows a database connection that is shared by many object stores in the Administration Console for Content Platform Engine.

When creating an object store, you either reuse an existing database connection or follow the same procedures required for creating the initial object store. If you are reusing an existing database connection, you can run the New Object Store wizard without any further preparations.

Benefits to sharing data sources

Object stores and isolated regions that share a database require fewer data sources and database connections. Sharing one database across the object stores greatly reduces the administrative costs of the system. Another advantage is that you can create new object stores without needing a database administrator to assist. Object store data is kept separated by having different schema names.

Sharing data sources

To configure objects to use the same data sources, you specify the same database connection for each object store or isolated region.

The ability to share a database is achieved by the use of unique schema names. When you create the object store, you specify a schema name and all the tables and indexes are created within that schema.

Restrictions

Object stores or isolated regions that must be backed up independently must be stored in separate databases.

Object stores and isolated regions that are used for IBM Case Manager must be stored in the same database and cannot be backed up independently.

Prepare to Create an Object Store

- Plan the number of object stores that are needed for the following tasks:
 - Supports enterprise IT organizational structure
 - Simplifies security for many document types and deep folder structures
 - Improve search performance
- Determine one or more file storage areas
 - Improves retrieval performance for large documents.
- Consider which database type you use.
 - All the object stores that you create must be based on the same database type.
- Determine database connections.
- Decide which users and groups work with the object store and their rights.
 - Adding users and groups after you create an object store is time-consuming.

Figure 1-10. Prepare to Create an Object Store

In some cases, you might use multiple object stores to better manage the system. The usefulness of multiple object stores depends on the complexity of the enterprise and the capabilities of the system administrator.

Multiple object stores can support enterprise organizational structure. For example, the management might assign one administrator to Human Resources and another to Finance. If each department has its own object store, assigned responsibility is clear.

Multiple object stores simplify security for widely varied document types or deep folder structures.

When an object store contains many tens of thousands of objects, or when folder structure approaches 20 sublevels, administration of security for the objects becomes complex. This complexity is an indication to consider multiple object stores.

Multiple object stores help improve Search performance.

Database use

All the object stores that you create must be based on the same database type. For example, you cannot create an object store that is based on IBM DB2 for Linux, UNIX, or Windows and another object store that is based on Microsoft SQL Server.

Users and Groups

Plan for which users and groups work with the object store, and what access rights the users and groups need.

Object stores do not all need to have the same initial set of users and groups. You can grant users access to an object store when you create the object store. However, adding users and groups after you create an object store is time-consuming. To add a user or group to an existing object store, you must manually add the user or group to all objects in the object store and assign security settings as needed.

Before creating an object store, create one or more generic access users with the correct permissions. When you run the Create Object Store wizard, add the generic user to the object store.

If you specify an empty list for basic access, the wizard automatically adds #AUTHENTICATED-USER, which gives all network users in the authentication realm access to the object store.

Additional considerations:

- Plan a content cache area – It Improves system performance by using content caches.
- Whether to automatically import objects or run user scripts during object store creation. If you exported objects from another object store, you can configure Content Platform Engine to import the objects when you create an object store.

Add-ons for an Object Store

- You can configure a number of AddOns.
 - Select only needed Add-ons during Object Store creation.
- Default Add-on
 - Base Content Engine Extensions Add-ons are selected by default.
- Custom Add-ons
 - You can create custom Add-ons and install it on the Content Platform Engine.
- Workplace Base Extensions and Workplace XT Extensions are required for IBM Content Navigator.

5.2.1 Base Application Extensions
 5.2.1 Base Content Engine Extensions
 5.2.1 Process Engine Extensions
 5.2.1 Stored Search Extensions
 5.2.1 Thumbnail Extensions
 5.2.1 Workplace Base Extensions
 5.2.1 Workplace Templates Extensions
 5.2.1 Workplace XT Extensions

Figure 1-11. Add-ons for an Object Store

Help paths

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the FileNet P8 infrastructure>Add-on features

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/featureaddons/_start_here_fa.htm

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the FileNet P8 infrastructure>Add-on features>Add-on extensions>Workplace Base Extensions

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/featureaddons/wpcomaddon/_start_here_wpcom.htm?lang=en

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the FileNet P8 infrastructure>Add-on features>Add-on extensions>Workplace XT Extensions

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/featureaddons/xtaddon/_start_here_xt.htm

The screen capture shows selected Add-ons for an object store in the Administration Console for Content Platform Engine.

During Object Store creation, you can configure a number of Add-ons to support various Add-on features of the product. For example, support for DITA includes many Add-ons. If you do not need a feature, you can save space by not including those Add-ons.

Select only needed Add-ons during Object Store creation.

- More add-ons can be installed after the object store is created.
- Add-ons properties are implemented as database table columns.
- Benefit: saves row space in object store data tables.

Add-on features are modules that contain custom metadata and data to support extensions to core Content Platform Engine features, and applications that integrate with Content Platform Engine.

An add-on feature can be a product that is compatible with the FileNet P8 Platform, or an add-on feature included with the Content Platform Engine software.

The add-on feature name indicates the functions of the add-on, for example, 5.2 Publishing Extensions add-on provides the base functions necessary for IBM FileNet P8 publishing applications. In addition, the description for each add-on describes the add-on's functions in more detail. If you create custom add-on features, you can enter a description of your choice to help consumers of your add-on decide whether to install them.

Before you can install an add-on to an object store, you must first create it. After an add-on is created, you can install it to a new or existing object store.

Base Content Engine Extensions Add-ons

The Base Content Engine Extensions add a mechanism for generating a map (array) of lookup strings, which can be implemented to locate custom or application-specific properties, and to create labels for generic properties. This add-on feature also specifies a title for all documents that are stored in a FileNet P8 Content Platform Engine object store, which becomes the Name property for all FileNet P8 applications. It also provides a way for you to determine whether the GUI elements that represent a folder in FileNet P8 should be made visible to the user.

It is required for other extensions.

The Base Content Engine Extensions provide property templates and implement custom classes, objects, and properties in the following areas:

- Property templates
- Properties of Document Class and Subclasses
- Subclasses of Custom Object
- Properties of Folder Class and Subclasses
- Custom Objects
- Folders

5.2.1 Workplace Base Extensions

Workplace Base Extensions add property templates and custom subclasses and properties:

- Property templates
- Properties of Document Class and Subclasses

- Subclasses of Document Class
- Properties of Custom Object Class and Subclasses
- Properties of Folder Class and Subclasses
- Subclasses of Folder Class
- Subclasses of Link Class

5.2.1 Workplace XT Extensions

The Workplace XT Extensions add-on contains a class to support folder preferences. This class does not contain any new properties.

IBM Content Navigator

- IBM Content Navigator is a client for FileNet P8 Platform.
 - Provides a console for users to work with content.
 - Replaces IBM FileNet Workplace XT (IBM FileNet P8 5.2.1 and later).
- Connects to several types of repositories:
 - IBM Content Manager Enterprise Edition repositories
 - IBM Content Manager OnDemand repositories
 - IBM FileNet P8 repositories
 - OASIS Content Management Interoperability Services (CMIS) repositories
- For users to access the object store in IBM Content Navigator, you must configure the object store as a repository.
 - Connect IBM Content Navigator to the repository.
 - Associate the repository with an IBM Content Navigator desktop.
 - The object store must include 5.2.1 Workplace and Workplace XT extensions

Figure 1-12. IBM Content Navigator

Content Navigator 2.0.3>Planning, installing, and configuring IBM Content Navigator>IBM Content Navigator overview>IBM Content Navigator overview

http://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/euca0001.htm

Content Navigator 2.0.3>Planning, installing, and configuring IBM Content Navigator>Administering IBM Content Navigator components>Configuring the IBM Content Navigator web client>Configuring connections to repositories for IBM Content Navigator>Connecting and configuring IBM FileNet Content Manager repositories

http://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/eucco015.htm

For the following add-on features, you must install the add-on features to an object store before you configure the repository.

- You must install the WorkPlace Template Extensions add-on and the Workplace XT add-on.
- If you want to use cross-repository searches and save searches, you must first install the stored search add-on to the object store.

- If you want to use social collaboration features, you must install the social collaboration base extension add-on to the object store. You can install this add-on before or after you configure the repository.

Instructor demonstration

- Create a data source for an object store.



Unit summary

- Create JDBC data sources
- Create an object store
- Add an object store as a repository to an IBM Content Navigator desktop

Exercise: Build a FileNet Content Repository

Build a FileNet Content Repository

© Copyright IBM Corporation 2016

Figure 1-15. Exercise: Build a FileNet Content Repository

Exercise objectives

- Create JDBC data sources for an object store.
- Create an object store.
- Add an object store as a repository to an IBM Content Navigator desktop.



Unit 2. Work with storage areas

Estimated time

00:45

Overview

In this unit, you learn about content storage area types, file storage options, and architecture.

How you will check your progress

- Successfully complete the lesson exercises.

References

IBM Knowledge Center

<http://www.ibm.com/support/knowledgecenter>

Unit objectives

- List the types of storage areas.
- Describe storage options and architectures.
- Describe storage policies

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-1. Unit objectives

What is a storage area?

- A storage area is a place where Content Platform Engine stores content.
- Storage area types
 - Database storage areas
 - File storage areas
 - Fixed storage areas
 - Advanced storage areas
- These storage options can be used individually or together.

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-2. What is a storage area?

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcb026.htm

Storage area types

Database

A database storage area is the database used for the object store. Content Platform Engine stores both the objects and the content for those objects in the same database. Database storage areas are used for small content elements. For larger content elements, other storage options are preferred.

File

A file storage area is a hierarchy of folders on a shared network drive accessible by the Content Platform Engine server.

Fixed

A fixed storage area is a file storage area with an associated external (non-FileNet P8) fixed content system that provides more storage capacity and data retention. You can index a storage area of any type for content-based retrieval.

Advanced

An advanced storage area supports heterogeneous storage devices. OpenStack cloud storage and file system storage can be used in an advanced storage area.

Storage area options

- Encryption
 - Protects the content against access from outside of FileNet P8.
 - Incurs a performance cost for uploading and retrieval.
 - Renders content useless if the object store encryption data is lost.
- Duplication suppression
 - Reduces storage space required for content storage.
 - Checks incoming content to determine if it is a duplicate.
 - Incurs a performance cost for uploading content.
 - Does not apply to fixed content storage areas.
- Compression
 - Reduces storage space required for content storage.
 - Controlled by the content compression threshold.
 - Content is compressed if the content can be compressed below the compression threshold.
 - Can affect overall performance.
- Content Caching options
 - Not allowed
 - Cross-site only
 - Allowed

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-3. Storage area options

Help Paths

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Controlling how content is stored>Content encryption

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/contentstores/cs_content_encryption.htm

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Controlling how content is stored>Content duplication suppression

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/contentstores/cs_content_duplication_suppression.htm

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Controlling how content is stored>Content compression

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc125.htm

FileNet P8 Platform 5.0.0>Administering IBM FileNet P8>Administering Content Engine>Content storage>Storage areas>How to...>View and modify properties>Configuration tab

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.0.0/com.ibm.p8.ce.admin.doc/contentsstores/cs_file_store_properties_configuration_tab.htm

Encryption

Content Platform Engine encrypts and decrypts content by using AES in Counter mode, a Federal Information Processing Standard (FIPS) 140-compliant algorithm, with a 128-bit key or a 256-bit key.

You incur two performance penalties with content encryption. The first penalty occurs when you upload content to a storage area because more processing time is required to encrypt the content. The second penalty occurs when you retrieve content because more processing time is required to decrypt content.

Important: The retrieval of encrypted content relies upon information that is stored in the object store database. If that information is lost, the content is effectively lost also. To avoid such problems, regularly back up the object store database.

Duplication suppression

The suppression of duplicate content potentially reduces the storage space that is required to store content. Content Platform Engine suppresses duplicate content by checking the existing content before adding new content to the storage area. If identical content exists, the new content is not stored separately from the existing content. If no identical content exists, the new content is added in the normal manner.

Compression

Content that is uploaded to a storage area is compressed if content compression is enabled and if the content can be compressed below the content compression threshold.

Content compression uses blocked-compression technology that separates uploaded content into identical, size-controlled blocks. Compression takes place on an efficient block-by-block basis, in contrast to the uncompressed block size that is variable and based on the chunk size at upload.

Some content does not compress well, and the inefficiencies that are incurred by the compression process are not worth the marginal space savings. To avoid inefficiencies during both upload and download, you can specify a content compression threshold that applies to the storage area. Content is compressed only if the percentage of compression meets the threshold.

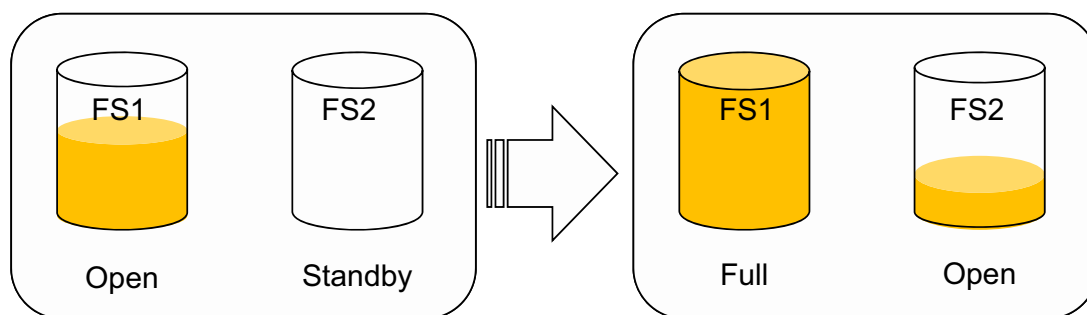
Content Caching options

Content caching provides faster access to content across sites by temporarily storing remote content locally. To reduce network traffic, content can be cached on the file system that is local to the Content Platform Engine server. A content cache area is an area that contains frequently accessed document content that is duplicated from the original content in storage areas. Content caching options are available from the Configuration tab of the storage area.

- **Not Allowed:** Storage area content caching is disabled.
- **Cross-site Only:** Caching of storage area content is available only when the storage area does not belong to the same site as the server that accesses the content.
- **Allowed:** Storage area content can be cached to any cache area.

Resource statuses of File Storage Area

Status	Create	Append	Delete	Retrieve
Open	x	x	x	x
Closed			x	x
Standby		x	x	x
Full			x	x



Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-4. Resource statuses of File Storage Area

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Changing the storage area resource status>Resource statuses

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/contentstores/cs_resource_statuses.htm

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Changing the storage area resource status>Automatic resource status changes

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/contentstores/cs_auto_resource_status.htm

Customizing the permissible operations for a resource status.

You can configure a storage area to disable some content operations that are otherwise enabled by a resource status. You can disable the following operations:

- Create content and Append content
- Delete content

Resource status changes occur in the following ways.

- **Automatically:** Content Platform Engine sets the resource status to Open for newly created storage areas, and also for storage areas with a status of Standby (in some circumstances). Also, Content Platform Engine changes the resource status from Open to some other status when detecting a particular storage area condition. For example, if FS1 reaches the maximum size and FS2 is on Standby, then FS1 switches from Open to Full, while FS2 switches from Standby to Open.
- **Indirectly:** You indirectly change the resource status when you set a storage area to be online or offline. Specifically, enabling the storage area to be online causes the resource status to be Open, and disabling the storage area to be offline causes the resource status to be Closed.
- **Directly:** You can directly change the resource status for a storage area.

Database storage areas

- Content is stored in the object store database.
- Content is converted into Binary Large Objects (BLOBs).
- A database storage area (contained by a table named "Content") is automatically created when you create an object store and specify the default storage area for document content is a database.
- Advantages
 - Easy to create
 - Fast for small files
- Limitations
 - Large files can cause errors with some database systems.

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-5. Database storage areas

Help path

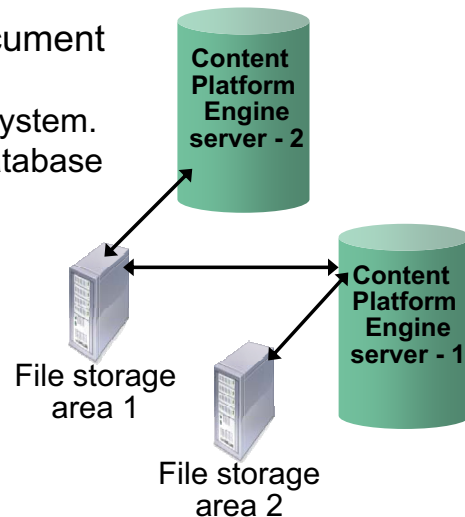
FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Database and file storage areas>Database storage areas

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/contentstores/cs_about_database_stores.htm

Controlled tests with limited concurrency exhibited errors when run with files that were 300 MB or larger. Factors affecting this file-size limitation include driver and application server memory demands, other activity such as concurrent retrieval or indexing of large content, and JVM memory allocations.

File Storage Area

- An area in the file system to store document content
 - In a folder on a local or distributed file system.
 - Associated metadata is stored in the database store.
- File systems that can be used:
 - UNIX file system
 - IBM General Parallel File System (GPFS)
 - Windows NTFS volume



- A many-to-many relationship exists between Content Platform Engine servers and file storage areas.
 - Many servers can manage one file storage area
 - A single server can manage multiple file storage areas.

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-6. File Storage Area

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Database and file storage areas>File storage areas

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/contentstores/cs_about_file_stores.htm

The diagram shows the many-to-many relationship between Content Platform Engine servers and file storage areas.

Note: You can create a file storage area only on a non-encrypted NTFS volume.

Content element model

- A document can have zero or more content elements.
- An element is either a content reference element or a content transfer element.

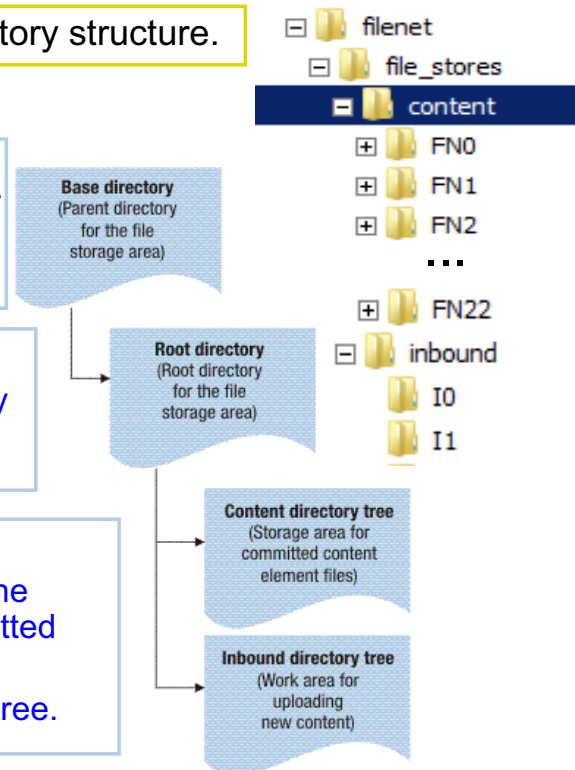
A content transfer element has an associated content file in the file storage area. The system uses combination of the document object identifier (GUID) and an integer sequence number to identify the document. Within the context of a document, the sequence number identifies the individual content element.

When you check in a document, the document content set becomes immutable. Although no content element for a checked-in document can be added or deleted, the entire document can still be deleted. When you delete a document, the content element files for the document are deleted.

File Storage Area Directory Structure

Example of a file storage area directory structure.

- Base directory
 - It is the **user-named** parent directory for one or more file storage areas.
 - Contains a stakefile.
- Root directory
 - It is the **user-named** top-level directory for a specific file storage area.
- Content directory tree
 - The directories at the lowest level of the content directory tree store the committed content element files.
 - The Storage Area wizard creates the tree.



Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-7. File Storage Area Directory Structure

The diagram shows the directory structure of a file storage area and the relationship between multiple file storage areas. It also shows an example of a file storage area directory structure.

The stakefile file is a system file that is created in the root directory of a file store directory structure and contains information about that structure. The following directories use this type of directory structure:

- A file storage area
- The staging directory of a fixed storage area
- The file system device of an advanced storage area
- Other fixed content devices such as Hitachi Content Platform.

If the stakefile file cannot be loaded, Content Platform Engine server cannot access the root directory.

You cannot create a file storage area in a directory that already contains a stakefile.

File storage area size control options

- Directory structure size
 - Small (23 x 23)
 - Large (23 x 23 x 23)
- Maximum number of elements
 - Sets the maximum number of total content elements that can be stored.
- Maximum size
 - Sets the maximum disk space that can be used.
- Deletion method
 - Clear – Lowest security, highest performance
 - Destroy – Medium security
 - Purge – Highest security
- Standby activation priority

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-8. File storage area size control options

Directory structure size

Anticipated growth and the need for physically grouping the documents for storage management, backup, or disaster recovery purposes determine the choice of directory structure. A large file storage area is more suited for storing many small content elements that contain single-page scanned documents or small emails. A small file storage area is better suited for fewer content elements with a larger average size, such as content element files with embedded images, spreadsheets, and graphics.

Maximum number of elements

Documents are stored among the directories at the leaf level by using a hashing algorithm. To augment performance, limit the number of content element files in a leaf directory to fewer than 5,000. For a small directory structure, the upper limit is around 2,500,000 content element files. For a large directory structure, the limit is about 60,000,000 content element files.

Maximum size

You can specify the maximum amount of disk space to which the storage area can grow. When this limit is reached, the file storage area is full.

Deletion method

Deletion method affects security and performance. The different methods for deletion run different operations on the magnetic content of the disk drive. The more secure the deletion method, the more costly it is in terms of performance.

Standby activation priority

As soon as an open storage area reaches Full status, one of the storage areas in Standby state is activated and assigned an Open state. Storage areas are selected for activation based on the standby activation priority that is defined when the storage area is created.

File storage area security

- Content Platform Engine must have full access to the folder.
 - Before creating a Storage Area, you must create the base and root directories under which file storage areas are created.
 - Set the security privileges on the directories.
 - Use the Content Platform Engine operating system user account.
- Windows based file storage areas
 - The operating system login accounts must exist in the same Windows domain or in trusted Windows domains.
- AIX, HPUX, HPUXi, Linux, or Solaris-based file storage areas
 - Security is configured with NFS.

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-9. File storage area security

Help path

FileNet P8 Platform 5.2.1>Security>Authorization>Storage area security

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.security.doc/p8psa026.htm

FileNet P8 objects are stored in the object store database. The files that the content element property of a document object refer to are stored in the content storage areas.

- Network security controls physical access to the folder and its contents.
- FileNet P8 object security permissions control access by FileNet P8 users and applications.
- Encryption can further protect the files against unauthorized access.

File storage area security

The Content Platform Engine operating system user (*cpe_os_user*) who logs on to the Content Platform Engine server and starts the local application server process is the account that must be used to secure the folders and files in a file storage area. The account that is used to install the application server should be the same account that is used to start the application server

process. As an administrator, you log on using the same operating system account to secure the folders and files in the file system that Content Platform Engine will use for a file storage area.

For Windows-based Content Platform Engine and file storage areas, these operating system login accounts must reside in the same Windows domain or in trusted Windows domains.

For Content Platform Engine and file storage areas based in AIX, HP-UX, HP-UXi, Linux, Linux on System z, or Solaris, security is configured using NFS, the protocol suite developed by Sun Microsystems that allows different makes of computers running different operating systems to share files and disk storage.

For a mixed environment of non-Windows and Windows, you will need an NFS Gateway product in order to provide interoperability between Windows-based and non-Windows-based clients.

Fixed storage areas

- A fixed storage area uses an external content storage device.
 - Content in fixed storage cannot be edited.
- Fixed content devices
 - Use independent API
 - Provide large storage capacity
 - Provide enforced content retention
- Compatible fixed content devices:
 - Hitachi Content Platform
 - IBM Tivoli Storage Manager
 - NetApp Snaplock fixed content device
 - Centera fixed content device
 - Atmos fixed content device
 - Isilon SmartLock fixed content device
 - Image Services fixed content device

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-10. Fixed storage areas

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Fixed storage areas

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc090.htm

Initially Content Platform Engine writes the object content to the staging area. While in the staging area, the object content element list can be freely modified. The object content is later moved from the staging area to the fixed device. Annotation content is never moved to the content device. When you check in an object content device, the object content for the specific version of the object becomes immutable.

Advanced storage areas

- Advanced storage areas provide high-availability content storage by using replication and replica repair.
 - Use Content Platform Engine Sweep and server communication services for replication, deletion, and abandoned content backout.
- Advanced storage areas support heterogeneous storage devices
 - OpenStack
 - File system
- Advanced file storage areas differ from file storage areas in the following ways:
 - Direct upload eliminates the content queue operations.
 - Supports a set of content integrity options.
 - Supports multiple replicas
- You must create an advanced storage device before you can use it in an advanced storage area.

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-11. Advanced storage areas

Help paths

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Advanced storage areas

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc220.htm

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Advanced storage devices

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc232.htm

Content Platform Engine uses the following queue sweeps for advanced storage areas:

- Abandoned content deletion: The sweep deletes the abandoned content from all storage devices, also referred to as replicas.
- Content deletion: Requests to delete content are placed in a queue. The sweep deletes the specified content from all replicas.

- Content replication sweep: Content that is not synchronously uploaded to a replica is asynchronously uploaded. Upload requests are placed in the replication queue, and the sweep initiates uploads to replicas.

Advanced storage area features

- Content integrity options
 - Specify when and how content is validated on the system.
 - Uses Content Consistency Checker.
 - Examples:
 - Validate on retrieval
 - Auto repair on validation
- Content streaming
 - Content is not stored in a temporary cache and then written to the repository.
 - Content is not broken into blocks.
 - Content is streamed directly to the advanced storage device.
- Replication
 - Content is replicated across multiple storage devices (called replicas).
 - Synchronous and asynchronous
 - Replicas required and desired
 - Replicas cannot be added to an existing storage area.

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-12. Advanced storage area features

Help paths

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Advanced storage areas>Content integrity options

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc276.htm

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Advanced storage areas>Content integrity options

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc276.htm

Content integrity options

Content integrity options use the Content Consistency Checker to verify content within the Advanced Storage Area at times that are specified by integrity options.

- **Validate on creation:** Validates the existence and size of the content after content upload.
- **Verify signature:** Verifies the content signature after content upload.

- **Validate on retrieval:** Validates the existence and size of the content at the beginning of content retrieval before returning content to the user.
- **Verify signature on retrieval:** Verifies the content signature before sending content to the user.
- **Auto repair on retrieval:** Initiates auto repair of the content if the content is declared invalid on a replica that is used for the retrieval operation.
- **Verify signature on validate content:** Verifies the content signature, if it is available.
- **Auto repair on validation content:** Initiates repair if content validation fails.
- **Compute content signature:** Calculates the content signature during content upload.

Content Streaming

Advanced storage uploads content directly to the final location. The upload completes before the Document or Annotation object is committed to the system. Content Queue processing is not used by Advanced Storage (except for creating a new Storage Device). A new piped streaming mechanism is used to make the content appear as a single stream of data to the content system (instead of multiple chunks of content).



Note

Direct content upload (required by Advanced Storage) requires server affinity. Server affinity requires all content upload chunks to be sent to the same Content Platform Engine server.

Replicas

- When a user adds content to an advanced storage area, the content can be written synchronously to a number of replicas.
 - Replicas are storage area devices with identical content.
 - Multiple replicas are useful for highly available systems.
- Required synchronous devices
 - Minimum number of replicas for successful document add or update.
 - Number must be greater than zero.
- Maximum synchronous devices
 - Desired number of replicas.
 - Document add or update succeeds even if this number is not met.
 - Number must be greater than the number of required replicas.

* Maximum synchronous devices: ?

* Required synchronous devices: ?

2
1

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-13. Replicas

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Storage area types>Replication

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc223.htm

Replication

When you create the advanced storage area, you can select the advanced storage devices to act as replicas. You specify the number of required and desired replicas. These replicas become duplicates. The replicas are set as either synchronous, or asynchronous.

- **Synchronous replication** refers to writing content to a replica before the related Document or Annotation object being saved to the database.
- **Asynchronous replication** refers to writing content to a replica in the background (by the Replication Queue Sweep) after the related Document or Annotation object is saved to the database.

When content is added to the object store, it is copied to a number of the advanced storage devices. The number of replicas that it is copied to depends on the number of required and desired replicas.

An Advanced Storage Area contains two properties on the Devices tab that control how many replicas are written synchronously during content upload:

- **Replicas Required:** Refers to the minimum number of replicas that are required for a content upload to be successful. The related content object or annotation is not added (or updated) if the number of required replicas is not successfully written during the upload. The Advanced Storage Area must have 1 or more required replicas. The number cannot exceed the number of advanced storage devices.
- **Replicas Desired:** Refers to the number of extra replicas beyond what is required that you want written. The Desired number must be equal to or greater than the Required number. If the number of desired replicas is greater than the number of required replicas, the system attempts to write the desired number. The upload is still considered successful if the desired number of replicas cannot be written, if the number of required replicas is reached.

You specify the number of synchronous replicas that are required and the number desired.

Important: replicas cannot be added to an existing advanced storage area.

Priority

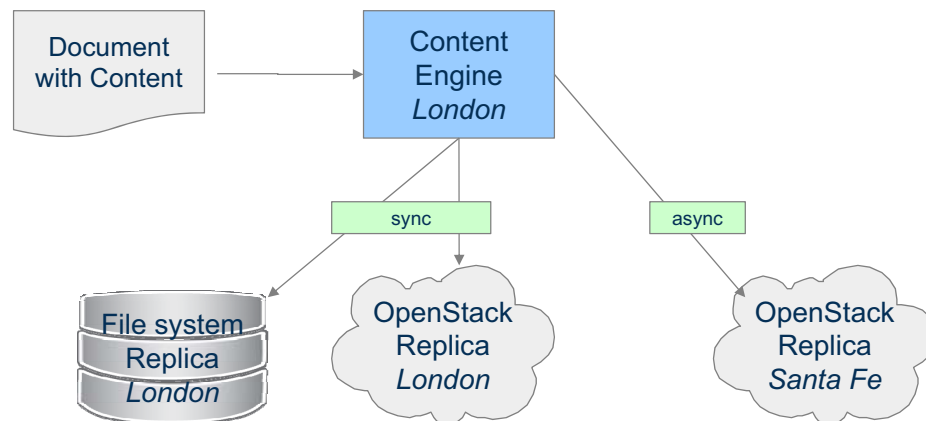
If the Content Engine and the replica are in the same site, then the replica is *local*.

If the Content Engine and the replica are in different sites, then the replica is *remote*.

Local replicas are usually preferred over remote replicas when determining which replicas should be used for upload or retrieval.

The screen capture shows the required and desired replicas as required synchronous devices and maximum synchronous devices in Administration Console.

Synchronous and asynchronous replication, common use case



In this example, the Content Platform Engine in London writes content synchronously to a file system replica and an OpenStack replica in London during upload and writes the content asynchronously to the OpenStack replica in Santa Fe.

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-14. Synchronous and asynchronous replication, common use case

The content that is stored in each replica of an Advanced Storage Area is (eventually) identical. For example, if content encryption is enabled for an Advanced Storage Area, the content is encrypted in all replicas associated with the area.

A replica is defined as primary, secondary, or asynchronous by the storage device connection object, which ties the advanced storage area to the storage device (CmStorageDeviceConnection object, ReplicaSynchronizationType property).

Both primary and secondary replicas are candidates for synchronous content upload.

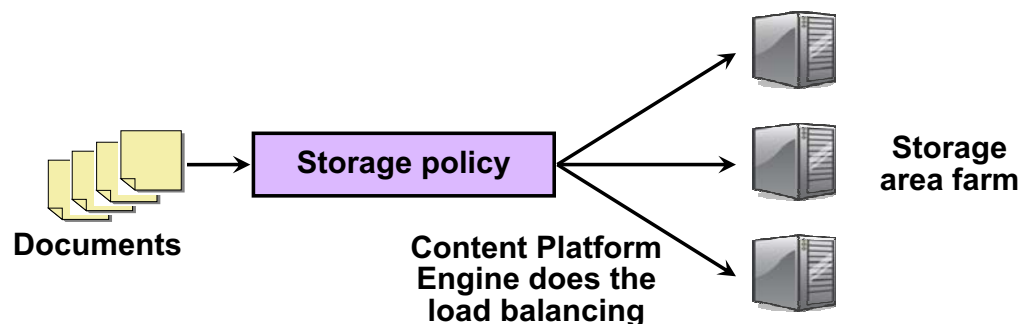
Asynchronous replicas are not candidates for synchronous content upload. They are written asynchronously

In general, primary replicas are higher priority than secondary replicas – but the site of the replica is also used when prioritizing replicas for upload or retrieval.

The higher the number of required replicas, the more robust the system is. However, replicas can also lead to problems with uploads. If the system cannot write the required number of replicas, then the upload fails. If you include a higher number of desired replicas, then the upload succeeds if the required number of replicas are written. If the upload is successful, but any of the desired replicas fails, those replicas are later written by using the Replication queue sweep.

What is a storage policy?

- Storage policy
 - Determines where document content is stored.
 - Maps to one or more storage areas.
 - Can be assigned to classes or documents.
 - Can be modified or deleted as needed.
 - Is used for storage area farming.
- Storage area farm is a group of storage areas.
 - Acts as a single logical target for content storage.



Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-15. What is a storage policy?

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the repository infrastructure>Storing content>Assigning document content to a storage area>Storage policies

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/contentstores/cs_stp_about_storage_policies.htm

The diagram shows the relationship between a storage policy and storage area farms.

Storage policies

A storage policy provides mapping to specific physical storage areas and is used to specify where content is stored for a class or object with content (for example, a document). Content Platform Engine supports the mapping of storage policies to one or more storage objects. Each storage policy can have one or multiple storage areas as its assigned content storage target.

Farming

A storage area farm is a group of storage areas (a subset of the available storage areas) acting as a single logical target for content storage. With farming, Content Platform Engine provides

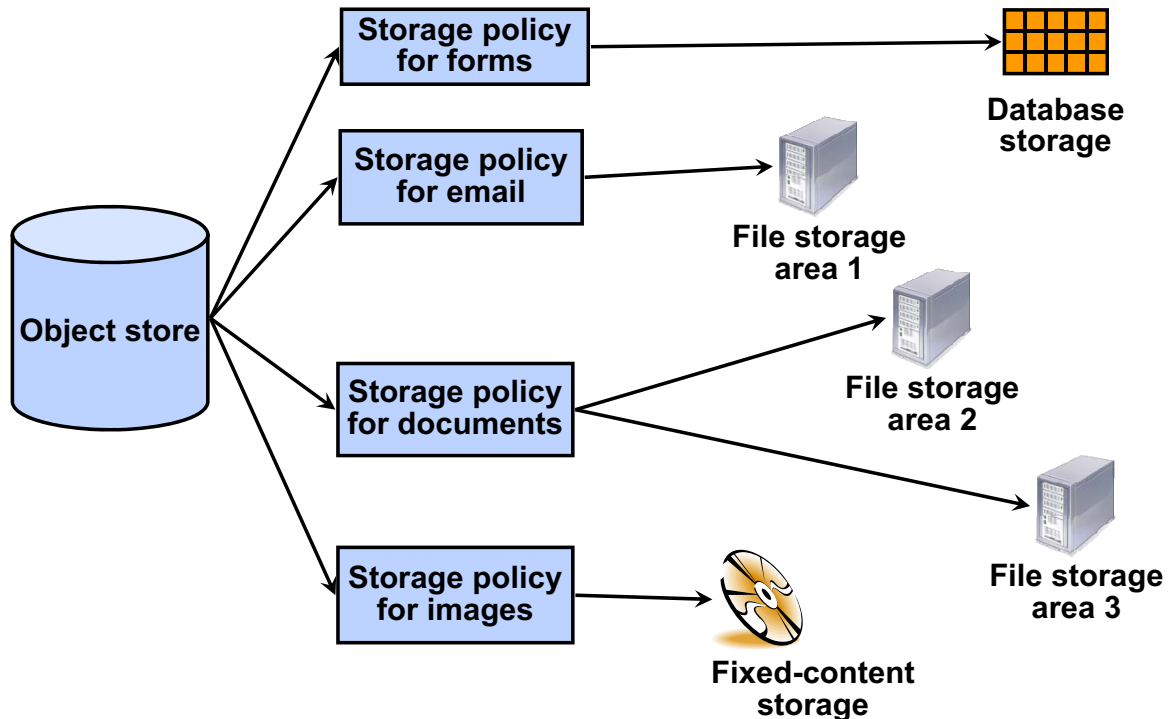
load-balancing capabilities for content storage by transparently spreading the content elements across multiple storage areas.

The storage policy functions as both the mechanism for defining the membership of a storage area farm, and also the means for assigning documents to that farm.

You can specify a single default content storage location for a document class. If you want to use storage farm capabilities, you need to use storage policies to manage the content delivery to the different storage areas.

A custom application can be designed to allow users to select the storage policy when they add documents.

Use Storage policies to distribute the content



Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-16. Use Storage policies to distribute the content

The diagram shows how you can use storage policies to distribute the content that belongs to a single object store.

Storage policies are used to specify storage areas for content. They can be used to farm content to multiple storage locations. The user does not know which server the content is stored on.

- A policy can specify that documents from one document class (for example, forms) are stored in the Content Platform Engine database.
- Another storage policy, which is used for documents, stores content on any of three different file storage areas.
- The third storage policy is for static images that are stored on optical media. These images are stored in a fixed storage area.

If a parent class and a subclass have different storage policies, the storage policy of the subclass is used. Because the storage policy is a property of the class, each class definition can have only one policy. You can set the property value on the parent class and have the value cascade to its children, but if you then change the value of a child class, that value becomes the value for that child class.

Instructor demonstration

- Create a file storage area
- Create a storage policy



Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-17. Instructor demonstration

Unit summary

- List the types of storage areas.
- Describe storage options and architectures.
- Describe storage policies

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-18. Unit summary

Review questions



1. List the storage area types.
2. True or False: A large storage area farm is useful for high-availability.

Review questions



3. Which type of storage area uses BLOBs?
 - A. File storage area
 - B. Database storage area
 - C. Fixed storage area
 - D. Advanced storage area

4. You have 2 available advanced storage devices. Which of the following settings are possible?
 - A. Required = 0, Desired = 2
 - B. Required = 2, Desired = 1
 - C. Required = 1, Desired = 1
 - D. Required = 1, Desired = 3

Review questions



5. What is the advantage of a file storage area over an advanced file storage area?
- A. Content Streaming
 - B. Content integrity checking
 - C. High scalability
 - D. None

Review answers



1. List the storage area types.

Database storage

File storage

Fixed storage

Advanced storage

2. True or False: A large storage area farm is useful for high-availability.

False. Large storage farms are useful for scalability, but do not provide added availability.

Review answers



3. Which type of storage area uses BLOBs?

- A. File storage area
- B. Database storage area
- C. Fixed storage area
- D. Advanced storage area

The answer is B.

3. You have 2 available advanced storage devices. Which of the following settings are possible?

- A. Required = 0, Desired = 2
- B. Required = 2, Desired = 1
- C. Required = 1, Desired = 1
- D. Required = 1, Desired = 3

The answer is C. Required replicas must be greater than zero. The Desired replicas must be equal to or greater than the Required. The number of replicas cannot exceed the number of devices.

Review answers



5. What is the advantage of a file storage area over an advanced file storage area?
- A. Content Streaming
 - B. Content integrity checking
 - C. High scalability
 - D. None

The answer is D. Advanced file storage systems do everything that standard file storage systems do, and have extra capabilities. The only caveat is related to server affinity.

Exercise: Work with storage areas

Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-25. Exercise: Work with storage areas

Exercise objectives

- Create a file storage area.
- Create a file storage policy.
- Create an advanced file storage area.



Work with storage areas

© Copyright IBM Corporation 2016

Figure 2-26. Exercise objectives



IBM Training

