

Digital Business Automation Demos and Labs

Lab instructions for 1. ECM sub-scenario

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0 Introduction

One of the core pillars of the Digital Business Automation platform are repository services for capturing, managing, and storing your business-related digital assets. Multiple repositories, called object stores, can be created and managed within a single system to serve your business requirements. Within these object stores, both the process and the case capabilities of the IBM Business Automation Workflow (BAW) offering are storing their digital assets. Knowledge of the IBM FileNet Content Platform Engine (CPE), the key IBM ECM offering, is therefore required to understand, review and maintain other components in the platform.

The exercises in this scenario target at providing an understanding of core principles of the IBM FileNet Content Platform Engine. They also build up the basis for supporting the platform end-to-end scenario. With this respect, the exercises are not designed to introduce the participants to new features of the newest versions of FileNet Enterprise Content Manager.

In the mortgage application end-to-end scenario the [FileNet Content Platform Engine](#) plays a major role. It is used to store the documents received from the client and handled through IBM Datacap, to manage access control, and to perform retention management. Furthermore, the FileNet Content Platform Engine is the foundation of the case capability of BAW that is used to handle the mortgage applications.

In this sub-scenario, the participant will define the required entities for performing the Workflow sub-scenario, therefore it is recommended to start with this sub-scenario before doing the Workflow one. Through the exercises, the participant will be introduced to the administration of the Content Platform Engine. Additionally, they will learn to define required entities that expose an interface to the Content Platform Engine to the end-users, through Content Navigator.

In **Exercise 1**, the participant will be guided to instantiate a copy of a virtual machine containing a pre-installed FileNet Content Platform Engine environment. In that exercise, the so-called Ping Pages are reviewed. They are an important source of configuration information.

In **Exercise 2**, the root folder for the documents for the mortgage application is created. By demonstrating how to set its security, the participants introduce themselves to all the other security management dialogs in FileNet Content Platform Engine, which are all similar in structure and nature.

In FileNet Content Platform Engine, Object stores can be configured to store content in a database, a file system, an OpenStack-conformant cloud storage device, a fixed content device such as IBM® Tivoli® Storage Manager, or a combination of these options. In **Exercise 3** the participant will define a new Advanced Storage Area for storage of the Mortgage Application documents. It will be configured to store documents twice,

redundantly, and the self-healing capabilities of the storage area will be demonstrated within the exercise.

In **Exercise 4**, the Document Classes and Property Templates will be defined for the Mortgage Application documents. The document classes define all the common properties of the documents, such as their default security and retention, among others, and the property templates define the metadata for the documents. These will not be defined by the participant, but migrated from a development environment, thereby introducing a very important tool, the FileNet Deployment Manager (FDM). FDM is essential for being able to test solutions on development environments, before they are used in production.

In **Exercise 5** the retention model for the Mortgage Application will be defined, thereby introducing a very important feature of FileNet Content Platform Engine, the Sweep Framework. It will be used to define different retention deadlines, based on the outcome of the mortgage application request, granting the mortgage or refusing it.

Exercise 6 is the last exercise defining entities in FileNet Content Platform Engine. It is about implementing the requirement for the Mortgage Application Solution, to have the payslips, which are provided by customers as a second step, be filed in a dynamically chosen folder. This folder is the folder belonging to the mortgage application case as it will be created as part of the Workflow sub-scenario. The correct folder is determined by looking up the cases of the chosen customer and filing the payslip in all of these.

In **Exercise 7 and 8**, the participants will define a user interface for the Mortgage Application in the Content Navigator. They will define a desktop with predefined searches, and an entry template for uploading new Mortgage Application documents. As the search templates defined in Exercise 8 are not required in the end-to-end scenario later, this **Exercise 8 is optional** with the respect that it does not need to be completed to run the end-to-end scenario later.

Exercises 9 and 10 are not required in order to successfully work on the remaining sub-scenarios and have been marked optional. However, they supply important insight into fundamental concepts of the FileNet Content Platform Engine. In **Exercise 9** the participant gets to prototype the next version of the Mortgage Application in the Development Object Store and has two parts. The first part of the exercise offers the chance to define a new Property Template and a new Class and thus practice to define these core building blocks of every FileNet Content Platform Engine application. The second part of the exercise is dedicated to the implementation of a security model for reviewing Mortgage Application documents and introduces some of the security features, namely Security Inheritance and the recently introduced Security Roles.

Finally **Exercise 10** introduces troubleshooting a Content Platform Engine environment, highlighting the location of log files, and best practices for capturing and reviewing traces.

The duration of working all the 10 exercises is largely dependent on the prior knowledge. We estimate it might need up to approx. 6 hours to be completed, with little prior knowledge of Content Platform Engine maybe more.

0.1 Audience

Everyone interested in the Digital Business Automation space, especially technical people with IBM Business Process Manager and IBM Case Manager background, but also people without any background but interested in IBM Business Automation Workflow. Especially:

- Case workers
- Solution Designers / Developers / Administrators
- L2/L3 support
- Sales/Tech Sales, GBS/GTS, Business Partners
- IBMers who sell or support ECM P8 products, or BPM Products

0.2 Prerequisites

- You **either** start with **Template 7** in case you intend to continue with this environment after solving the ECM sub scenario and implement the rest of the end-to-end solution
or
You start with **Template 1** if you intend to work on the ECM subscenario only.
- Link to the **shared box folder**
<https://ibm.ent.box.com/folder/53519546579?sortColumn=name&sortDirection=ASC>.
- Experience with FileNet Content Platform Engine is useful but not required.

0.3 Objectives

After completing the exercises of this sub-scenario, the participant will:

- Know how to get most important configuration data of a Content Platform Engine (CPE) installation
- Know how to define entities using the Administration Console for Content Engine (ACCE)
- Know how to setup an Advanced Storage Area for redundantly storing documents with the Content Platform Engine
- Know how to use the Deployment Manager for migrating entities between Content Platform Engine environments
- Know how to use the Sweep Framework for assigning document retention based on metadata of the documents
- Know how to file documents in folders, where the correct folder is depending on metadata of the documents
- Know how to define and apply security roles

- Know how to inherit security settings of the documents from the folders they are contained in
- Know how to define a user interface for FileNet Content Engine in Content Navigator
- Know where to find the log files, and where to enable traces in case of issues with a FileNet Content Platform Engine environment

0.4 About this Lab

This lab is split into multiple exercises. Each exercise consists of the following sections:

1) **Exercise Introduction**

Describes what you will learn & complete in this exercise, but also lists all needed data for the exercise so that experienced attendees can complete the exercise by only using this introduction section.

2) **Step by Step Instructions**

Guides you in easy to understand steps through the whole exercise. To be used by less experienced attendees.

3) **Verification Instructions**

Guides you through how to test & verify your implementation.

4) **Exercise Summary**

Summarizes what you have completed & learned.

0.5 A note on the screenshots

Some exercise screenshots show an Object Store named “Target Object Store” whereas the name of the Object Store used in other screenshots and the textual descriptions of the exercises is simply “Target”. The latter is to be used.

In the exercise screenshots, you might sometimes notice the IP address 10.0.0.2 is used instead of the hostname vm-1.example.com. In fact, both addresses can be used, but the latter is setup with WebSphere Single-Sign on settings, i.e. the session cookie is valid for the domain “example.com”, only.

As it might be that not all exercises of all sub-scenarios work if using the IP address **please always use the hostname vm-1.example.com**. We haven’t updated all the screenshots with this late change.

0.6 A note about the environment

The Virtual Machine VM-1 contains a freshly installed and configured FileNet Content Platform Engine environment, together with an LDAP Directory Server, and a database. This Content Platform Engine environment has been configured as external ECM environment on the BPM environment from VM-3. For this, some object stores needed to be created.

On the Content Platform Engine environment, four Object Stores have been created. The Object stores “BPM Attachments”, “Design” and “Target” have been configured for use of the BPM environment. On the forth Object Store named “Development”,

the classes and property templates for the end-to-end solution have been predefined. This has been done as their Global Unique IDs (GUIDs) need to have known values, so that no errors will occur on the later exercises in the BPM Case Management exercises. The definitions are essentially deployed as part of Exercise 4 to the “Target” object store, where they are needed, thereby retaining the GUID values.

1 Exercise: Getting Started

Duration approx.: 20 Minutes

1.1 Getting Started – Introduction

In this exercise you will complete the required steps to get started with the ECM sub-scenario. You will

1. Start working with your new environment based on **Template 1** or **Template 7** to perform the exercise.
2. Connect to and start your environment.
3. Get introduced into the UIs and tools needed later in this lab.

1.2 Getting Started – High-level Steps

You either start working with your new environment based on **Template 1 – Implement ECM sub-scenario only** or with **Template 7 – Implement End-To-End Scenario** to perform the exercise.

In your environment, start **VM 1 – ECM** only. Make sure to keep the other VMs suspended. You will only work with VM 1 – ECM.

In this Exercise you will get introduced to the UIs and tools needed during the ECM sub-scenario by accessing them in your environment:

In this exercise you will access the following tools / resources (see also the Bookmarks Toolbar of Firefox / Chrome)

Tool	Location / URL
Content Platform Engine Ping Page	http://vm-1.example.com:9080/FileNet/Engine
Content Platform Engine Health Page	http://vm-1.example.com:9080/P8CE/Health
Content Platform Engine Automatic Upgrade Status	http://vm-1.example.com:9080/FileNet/AutomaticUpgradeStatus
Content Platform Engine Process Engine Ping Page	http://vm-1.example.com:9080/peengine/IOR/ping
Content Navigator Ping Page	http://vm-1.example.com:9081/navigator/Ping

Note: For your convenience we have prepared bookmarks in Firefox for all of the tools mentioned above.

For this, you will require the following IDs and passwords: (0 is a zero)

Tool	User ID	Password
Windows	Administrator	passw0rd
Content Platform Engine Process Engine Ping Page	p8admin	Think4me
Content Navigator Ping Page	p8admin	Think4me

The exercise is completed, when you have successfully accessed all those tools.

1.3 Getting Started – Step by Step Instructions

- 1) You either start working with your new environment based on **Template 1 – Implement ECM sub-scenario only** or with **Template 7 – Implement End-To-End Scenario** to perform the exercises. In case you want to implement the End-To-End Scenario, you should be selecting Template 7.
- 2) Follow the instructions in the Getting Started document found in the shared box folder
<https://ibm.ent.box.com/s/7748b8i0k89h46r77vd6pfk100m00pnu?sortColumn=name&sortDirection=ASC> to create a new environment based on Template 1 or Template 7.
- 3) For the **ECM sub-scenario**, you require **VM 1 - ECM** running, the other VMs can stay in suspended state. Following the instructions in the Getting Started document, start **only** the virtual machine named **VM-1 – ECM**.
- 4) In the exercises for the ECM sub-scenario you will only work with **VM 1 – ECM**.

The **Windows username / password** for the environment is **Administrator / passw0rd**. Enter it in case you get prompted for it.

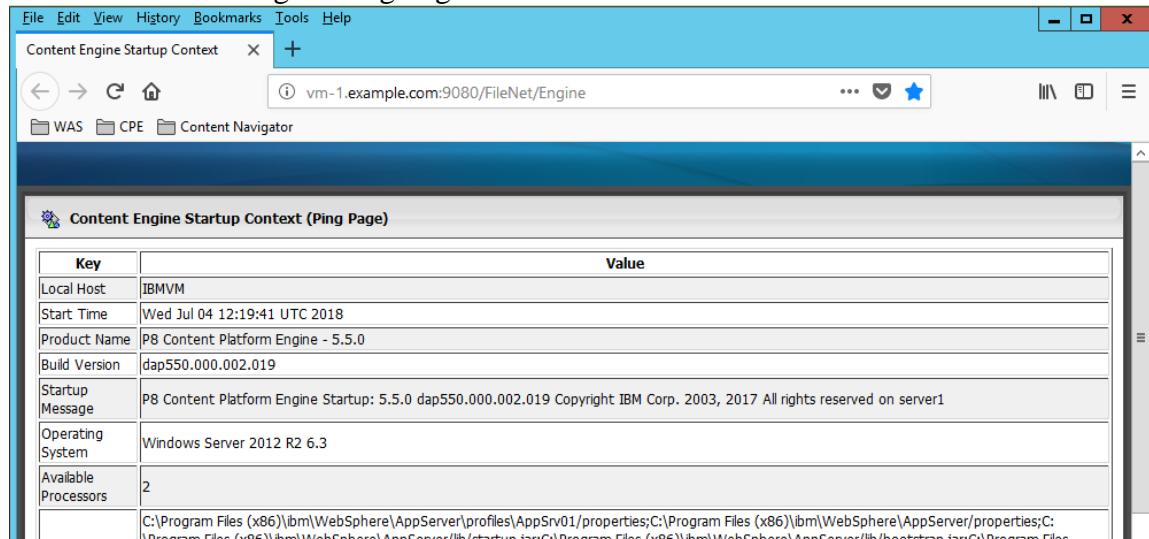
- 5) Open Firefox and click the links from the introduction. You will find the links in the bookmarks toolbar, for your convenience.

Using the pages from the introduction section, it is suggested to try and identify following configuration values

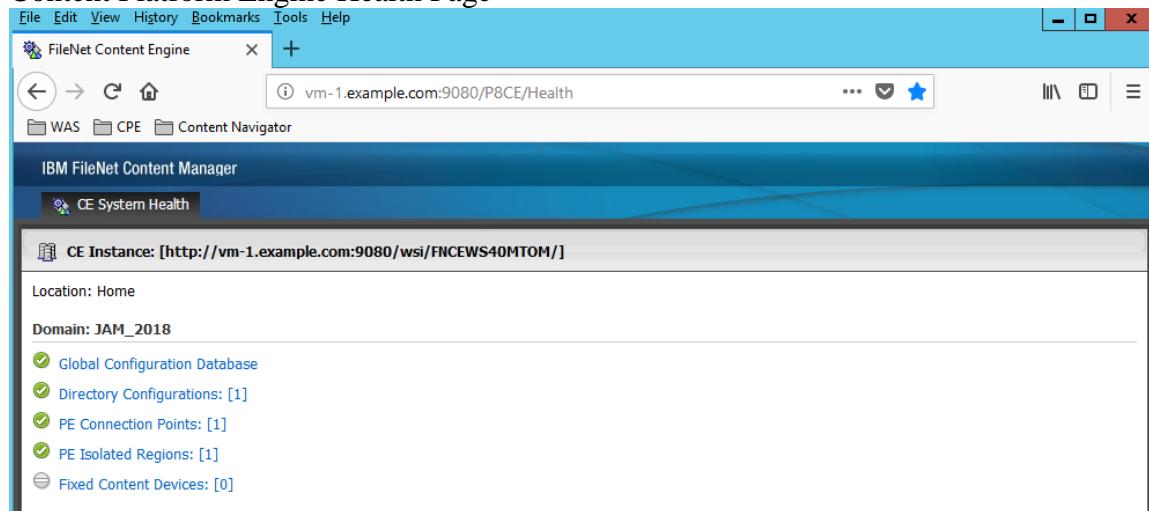
Tool	Setting	Value
Content Platform Engine Ping Page	Build Version	
	P8 Domain Name	
	Log File Location	
Content Platform Engine Health Page	Number and Names of Object Stores	
	PE Connection Point Name	
Content Platform Engine Automatic Upgrade Status	Database Schema Version of Object stores	
Content Navigator Ping Page	DaeJa ViewOne Professional Server Version	
	CE Client Build version	

In the following screenshots, the Tools / Resources are shown.

Content Platform Engine Ping Page



Content Platform Engine Health Page



Clicking on the “Object Stores” Link

The screenshot shows the IBM FileNet Content Manager interface. The title bar says "FileNet Content Engine". The address bar shows "vm-1.example.com:9080/P8CE/Health/OS". The left navigation bar has links for "WAS", "CPE", and "Content Navigator". The main content area is titled "CE Instance: [http://vm-1.example.com:9080/wsi/FNCEWS40MTOM/]". Below it, the location is "Home > Object Stores". A "Details" section lists four checked items: "BPM Attachments", "Development", "Design", and "Target".

Automatic Upgrade Status Page

The screenshot shows the "Content Engine Automatic Upgrade Status" page. The title bar says "Content Engine Automatic Upgrade". The address bar shows "vm-1.example.com:9080/FileNet/AutomaticUpgradeStatus". The left navigation bar has links for "WAS", "CPE", and "Content Navigator". The main content area is titled "Content Engine Automatic Upgrade Status". It shows the status for the P8 domain "JAM_2018" as "Ready". Below that, it shows the status for object stores: BPM Attachments, Design, Development, and Target, all listed as "Ready". There is also a link "Startup context (Ping Page)".

FileNet Content Platform Engine Process Engine Ping Page

The screenshot shows a web browser window titled "PE Server-IBMVM". The address bar contains "vm-1.example.com:9080/peengine/IOR/ping". Below the address bar, there are tabs for "WAS", "CPE", and "Content Navigator". The main content area is titled "Process Engine Server Information (Ping Page)" and contains a table with the following data:

Key	Value
Product Name	P8 Content Platform Engine - 5.5.0
Build Version	dap550.000.002.019 pe.jar;dap550.000.002.019, 02/13/2018 14:49:26
Operating System	Windows Server 2012 R2 6.3 amd64
JVM	JRE 1.8.0 Windows Server 2012 R2 amd64-64 Compressed References 20160713_311397 (JIT enabled, AOT enabled) J9VM - R28_Java8_SR3_20160713_0915_B311397 JIT - tr.r14.java.green_20160329_114288 GC - R28_Java8_SR3_20160713_0915_B311397_CMPRSS J9CL - 20160713_311397
Start Time	2018/07/04 12:19:51.400+0000
ClassPath	C:\Program Files (x86)\ibm\WebSphere\AppServer\profiles\AppSrv01\properties;C:\Program Files (x86)\ibm\WebSphere\AppServer\properties;C:\Program Files (x86)\ibm\WebSphere\AppServer\lib\startup.jar;C:\Program Files (x86)\ibm\WebSphere\AppServer\lib\bootstrap.jar;C:\Program Files (x86)\ibm\WebSphere\AppServer\lib\jsf-nls.jar;C:\Program Files (x86)\ibm\WebSphere\AppServer\lib\Improxy.jar;C:\Program Files (x86)\ibm\WebSphere\AppServer\lib\urlprotocols.jar;C:\Program Files (x86)\ibm\WebSphere\AppServer\deploytool\itp\batchboot.jar;C:\Program Files (x86)\ibm\WebSphere\AppServer\deploytool\itp\batch2.jar;C:\Program Files (x86)\ibm\WebSphere\AppServer\java_1.8_64\lib\tools.jar

Content Navigator Ping Page

The screenshot shows a web browser window titled "vm-1.example.com:9081/navig". The address bar contains "vm-1.example.com:9081/navigator/ping.jsp". Below the address bar, there are tabs for "WAS", "CPE", and "Content Navigator". The main content area is titled "IBM Content Navigator Ping Page" and contains a table with the following data:

Key	Value
Product Name	IBM Content Navigator
Build Level	icn303.002.025 (201803082238)
Version	3.0.3
Daeja ViewONE Professional	Client 4.1.5 FP 2 iFix 3 (9269) Server 4.1.5 FP 2 iFix 3 (Packaged from 5.0.3 iFix 4) (9269)
Daeja ViewONE Virtual	5.0.3 iFix 4 (9269)
Operating System	Windows Server 2012 R2 6.3
JVM	java.vm.vendor IBM Corporation java.vm.name IBM J9 VM

1.4 Getting Started – Verification Instructions

To verify successful completion of this exercise, verify that you have been able to open the following UIs / tools without any issues and have found the respective information:

- 1) Content Platform Engine Ping Page
- 2) Content Platform Engine Health Page
- 3) Content Platform Engine Automatic Upgrade Status
- 4) Content Platform Engine Process Engine Ping Page
- 5) Content Navigator Ping Page

1.5 Getting Started – Summary

In this exercise you have:

- 1) Created your environment for the ECM sub-scenario
- 2) Resumed and accessed it
- 3) Learned which tools to use to retrieve important configuration information

Especially you have learned where the log files for Content Platform Engine (CPE) are located.

2 Exercise: Folder for Incoming Mortgage Applications

Duration approx.: 20 Minutes

2.1 Folder for Incoming Mortgage Application Documents – Introduction

In a FileNet Content Platform Engine environment, documents and other entities are stored in Object Stores. The Object Stores required for this demo have been pre-defined. You have listed them in the last exercise. For some background reading on Object Stores, please refer to the documentation

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.dev.ce.doc/objectstore_conceptsIntro.htm.

To be able to find the documents belonging to the Mortgage Applications easily, one commonly used technique is to file the documents in a Folder. In this exercise, you will create the folder, into which the Datacap solution will later store all Mortgage Application documents that it receives.

2.2 Folder for Incoming Mortgage Application Documents – High-level Steps

- Log-on to Content Platform Engine Administrative Console (ACCE),
- Create a folder named "Incoming Mortgage Application Documents" in the root folder of the object store "Target",
- Configure security so that the group "P8Admins" has "Full Control" to the folder, and users of the group "testers" have "read access".

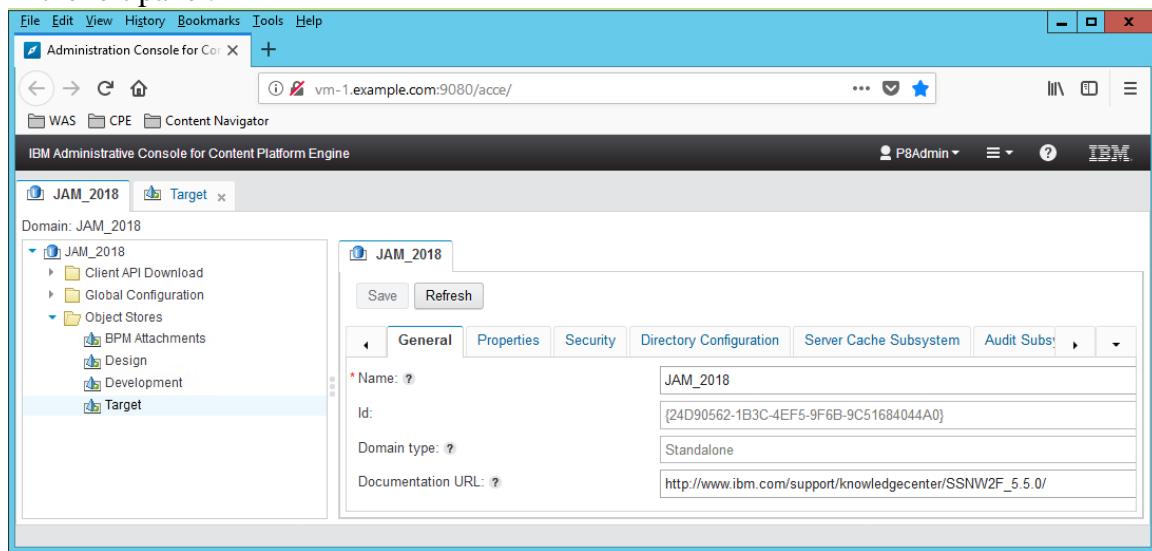
In this exercise you will access the following tools / resources

Tool	Location / URL
Content Platform Engine Administrative Console (ACCE)	http://vm-1.example.com:9080/acce

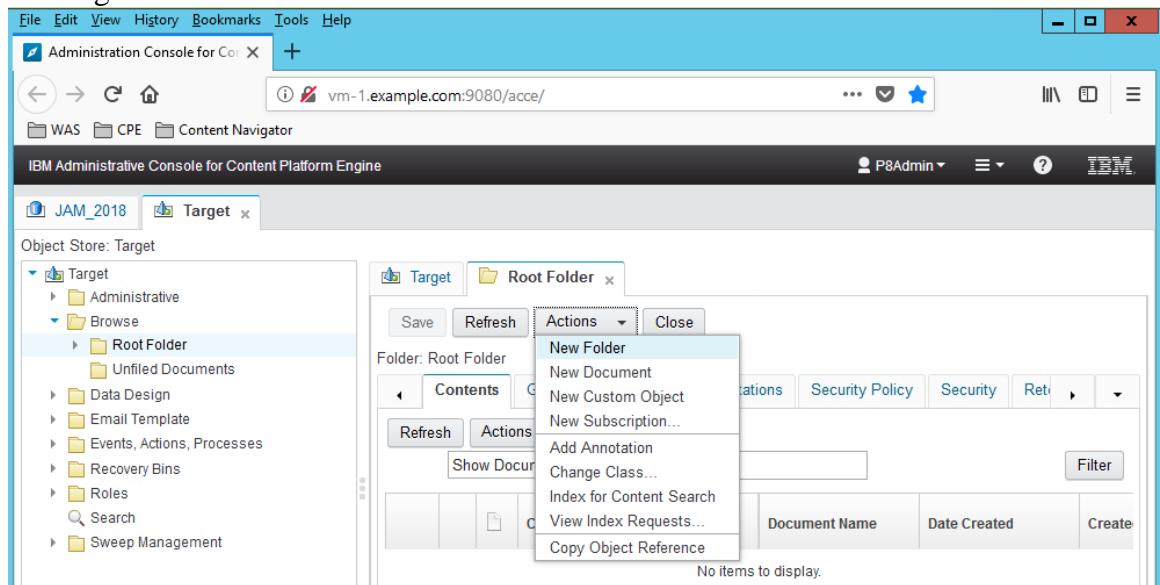
2.3 Folder for Incoming Mortgage Application Documents – Step by Step Instructions

To get started with this exercise, execute the following steps:

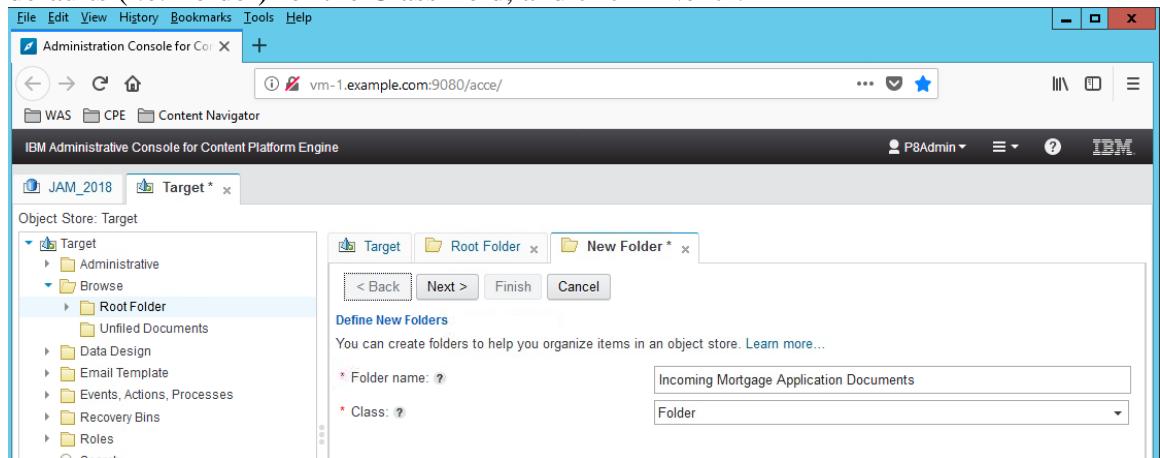
- 1) Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the object store "Target" by clicking "JAM_2018 > Object Stores > Target" in the left panel.



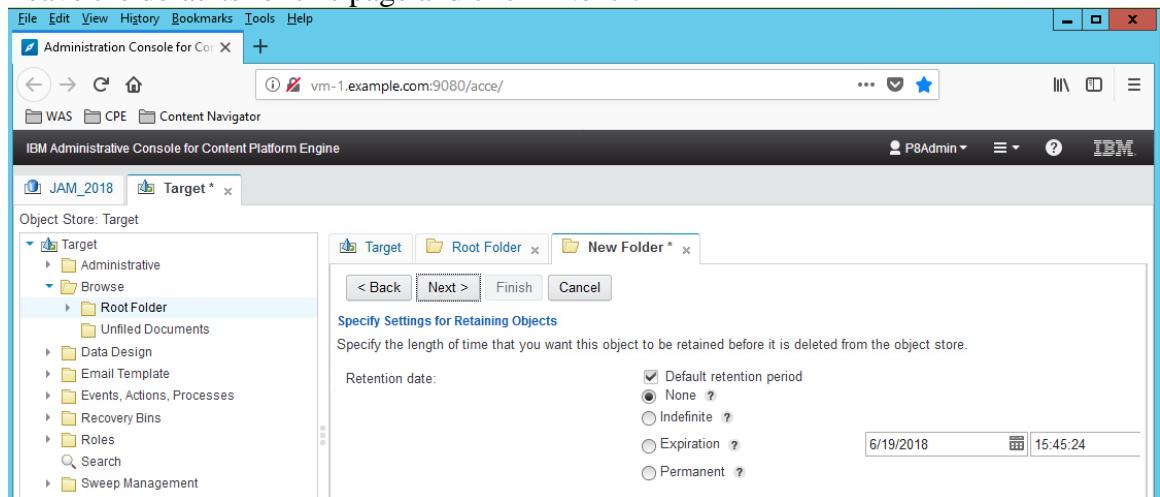
- 3) Open the "Root Folder" tab of the "Target" object store by clicking "Target > Browse > Root Folder" in the left panel, and then open the "New Folder" tab by clicking "Actions > New Folder" in the "Root Folder" tab.



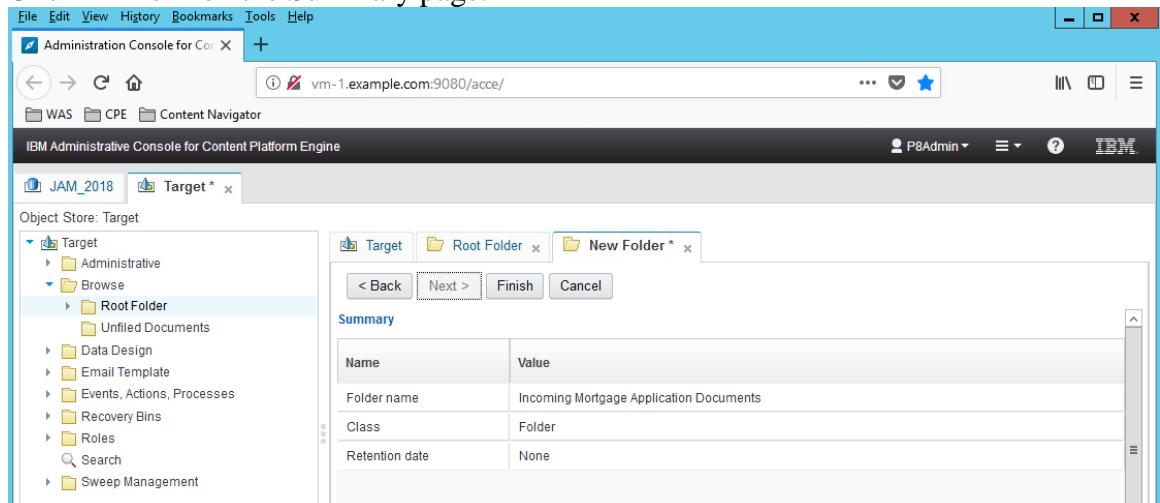
- 4) Enter "Incoming Mortgage Application Documents" as Folder name, leave defaults (i.e. Folder) for the Class field, and click "Next".



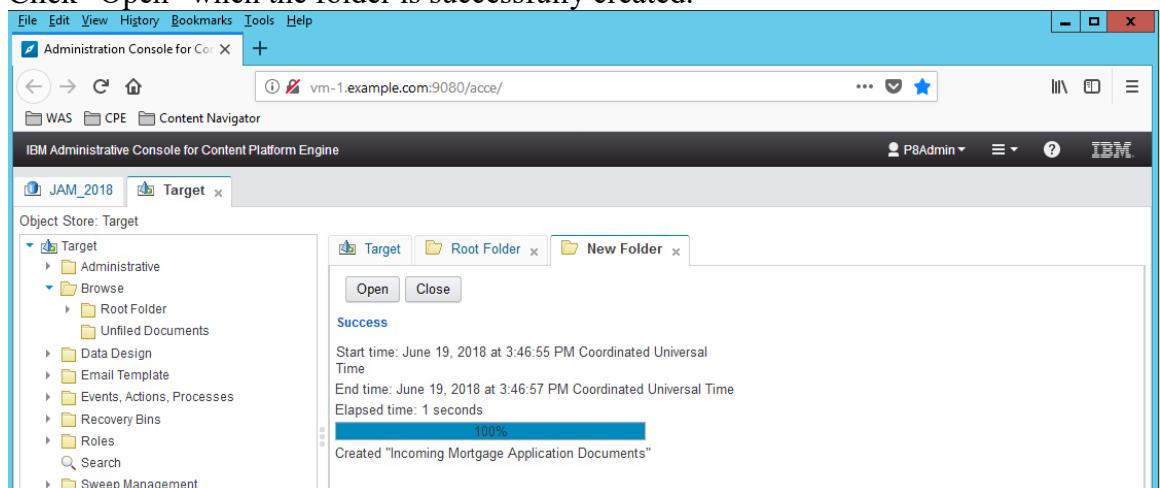
- 5) Leave the defaults for this page and click “Next”.



- 6) Click “Finish” on the Summary page.



- 7) Click “Open” when the folder is successfully created.



- 8) Click on the “Security” sub-tab in the "Incoming Mortgage Application Documents" tab.

Name	Source	Permission Type	Permission Group	Apply To
#AUTHENTICATED-USERS	Default	Allow	View properties <Default>	This object only
P8Admins	Default	Allow	Full Control	This object only
P8Admin	Default	Allow	Full Control	This object only

- 9) Delete access for group “#AUTHENTICATED-USERS” and user “P8Admin”: Select “#AUTHENTICATED-USERS” and “P8Admin” in the table and click “Remove”.

Name	Source	Permission Type	Permission Group	Apply To
P8Admins	Default	Allow	Full Control	This object only

- 10) Add “View Properties”-access for the "testers" group:

- Click "Add User/Group Permission", and you will see the "Add Users and Groups" dialog.
- Enter “test” in the "Search by" field and click “Search”.

- c. Select "testers" in "Available Users and Groups" and move it to "Selected Users and Groups".

- d. Scroll down, select "View Properties <Default>" in the "Permission group" field, and click "OK".

- e. Click "Save" in the "Incoming Mortgage Application Documents" tab.

Name	Source	Permission Type	Permission Group	Apply To
P8Admins	Direct	Allow	Full Control	This object only
testers	Direct	Allow	View properties <Default>	This object only

You finished to create and configure access to a folder named "Incoming Mortgage Application Documents". This is where the documents relevant for the mortgage application will be placed in.

2.4 Folder for Incoming Mortgage Application Documents – Verification Instructions

You will verify this exercise as part of exercise 3.

2.5 Folder for Incoming Mortgage Application Documents – Summary

In this exercise you have:

- 1) Created a folder named "Incoming Mortgage Application Documents" in the root folder of the object store "Target".
- 2) Configured security so that only the group "P8Admins" has "Full Control" to the folder, and the group "testers" has "Read" access rights. Access rights for all other groups/users has been removed.

3 Exercise: Create Storage Area

Duration approx.: 50 minutes

3.1 Create Storage Area – Introduction

A Storage Area is a place where Content Platform Engine stores content. Every document in the Content Platform Engine is stored in one of the Storage areas. The default storage area, which is created together with the Object Store, is the Database Storage Area. It uses the Object Store database for storing the document content. It has the advantage that it is not separate from the database, making it easier to perform backups, for example. But it has its limitations: The maximum permitted document size might be limited by the database provider, and storage space in the database is usually more expensive than other storage technologies. For more about database storage areas, please refer to the documentation

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.admin.taks.doc/contentstores/cs_about_database_stores.htm

While the database storage area for an Object store is predefined, other types of storage areas can be created. For storing documents on a file system, FileNet Content Platform Engine supports the “File Storage Area”. When it is used, documents are stored in files, which are stored in a File system, those root directory is specified when the File Storage Area is created. That file system needs to be available to all servers of a FileNet Content Platform Engine environment, and needs to be backed up together with the Object Store Database, where it is used.

For using dedicated storage hardware, FileNet Content Platform Engine offers the “Fixed Storage Areas”. With them, files are received in a file system called “Staging Area”, which is local to the FileNet Content Platform Engine server. When the document has been uploaded to the Staging Area, it is migrated to a Fixed Content Device and removed again from the Staging Area. One of the advantages of the Fixed Content Devices is that they support Retention, meaning that it is impossible to delete documents on them before a configurable date has been reached. This retention support is older than the more general Retention support in the FileNet Content Platform Engine. Both types of retention can be combined, and this is sometimes required to fulfil regulation requirements. For more details, you can find more about Fixed Storage Areas in the documentation on

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.admin.taks.doc/p8pcc090.htm

With the “Advanced Storage Area”, a new kind of storage areas was introduced with Version 5.2 of FileNet Content Platform Engine. When using Advanced Storage Areas, documents can be redundantly stored in one or more Storage Device. Storage Devices can be local file systems, or can be located “in the cloud”, with support for Hadoop, OpenStack and Amazon S3 in version 5.5.1 of FileNet Content Platform Engine. Storage of documents on multiple storage devices gives the advantage of being able to repair damages, and to serve a get content request from a storage device, which is local to the

FileNet Content Platform Engine server. For more details, please refer the documentation on
https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.admin.tasks.doc/p8pcc220.htm

When the storage areas are created, it is an important configuration task to specify, which document should be stored in which storage area. This configuration is usually done through the document class and can be done in two different ways, directly and indirectly.

The administrator can assign the storage area, to be used for the documents of a class, by directly assigning the storage area to the document class, in the “General” tab of the Class Property window. When this is done, this means that any document created will use this storage area, and store that information in the document metadata. While this usually works ok while the document is created, it imposes a problem when the documents are checked out, and the storage area in the meantime is full, or has been configured for read-access only, as no other storage area is available to the document.

For this reason, it is better and common practice to assign the storage areas to storage policies, and then use these storage policies in the document class. Again, the reference to the storage policy will be stored in the document metadata, when the document is created. However, when a storage area is full, a new one can be added to the storage policy, and that information is then available to the document upon checkout. So this avoids issues when a document should be checked out from a full or read-only storage area. Also this imposes the possibility to assign more than one storage area to a storage policy, in which case FileNet Content Platform Engine will distribute uploaded documents to multiple storage areas, thereby avoiding contention. More information regarding Storage Policies can be found in the documentation again, under

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.admin.tasks.doc/contentstores/cs_stp_about_storage_policies.htm

In this exercise, you will create an Advanced Storage Area with two Advanced Storage Area Devices and one Storage Policy, into which all incoming Mortgage Application documents will be stored. You will redundantly store documents on both storage devices, and also simulate a damage to one of the storage devices, and evaluate automatic repair.

3.2 Create Storage Area – High-level Steps

- Log-on to Content Platform Engine Administrative Console (ACCE)
- Create two Advanced Storage Area Devices on different local directories: ADVSD1 & ADVSD2
- Create an Advanced Storage Area that stores content encrypted on these two devices: ADV_SA
- Create a Storage Policy for the Advanced Storage Area "ADV_SA": Mortgage Application Storage Policy
- Upload a document to the folder "Incoming Mortgage Application Documents", where its content is automatically stored in the Advanced Storage Area "ADV_SA"
- Find and delete the document file from one of the storage devices using the Windows Explorer
- Run the FileNet Consistency Checker to detect this inconsistency and automatically repair the Advanced Storage Area.

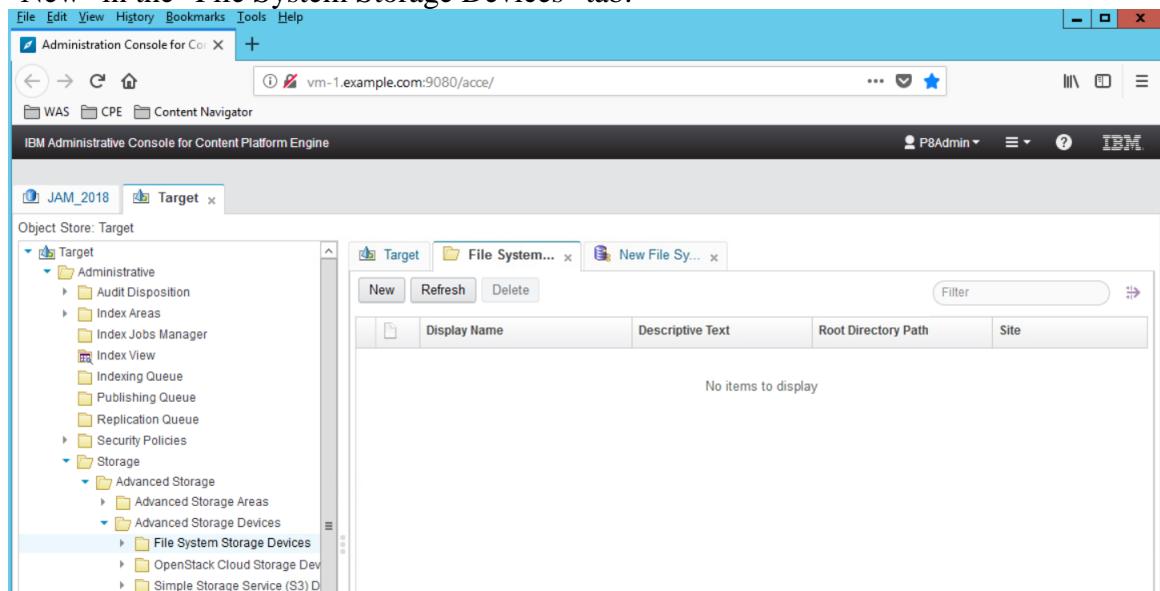
In this exercise you will access the following tools / resources

Tool	Location / URL
Content Platform Engine Administrative Console (ACCE)	http://vm-1.example.com:9080/acce

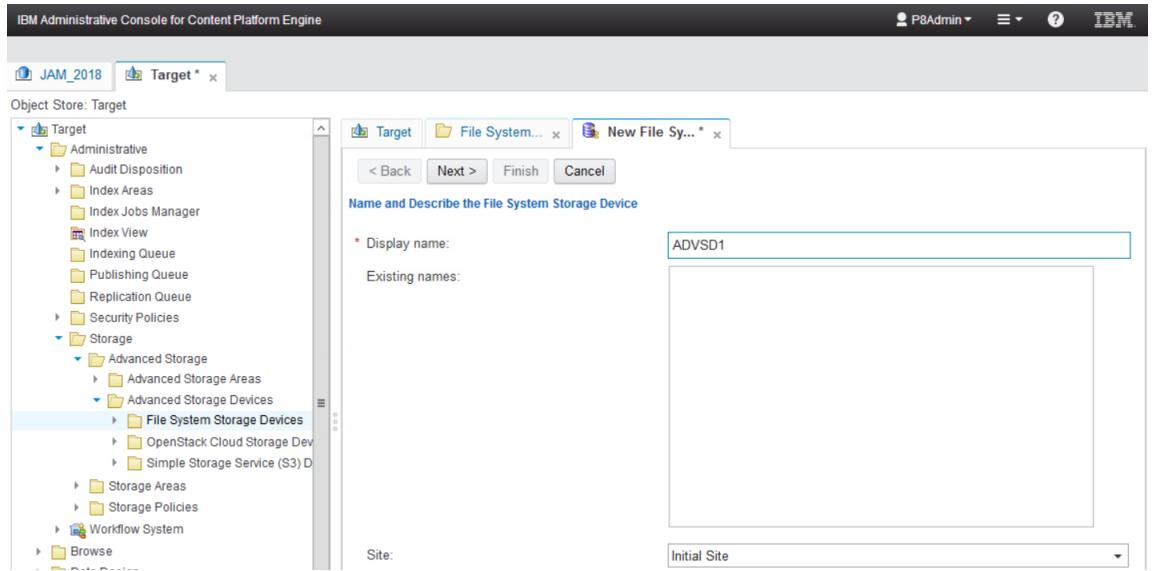
3.3 Create Storage Area – Step by Step Instructions

To get started with this exercise, execute the following steps:

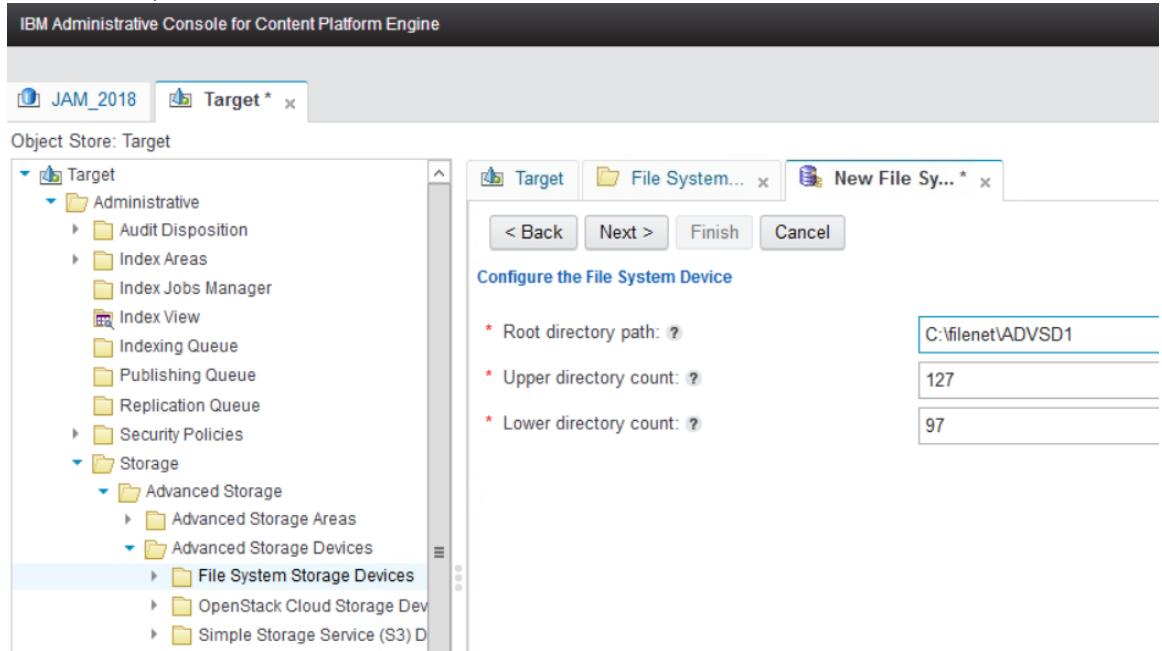
- 1) Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the object store "Target" tab by clicking "JAM_2018 > Object Stores > Target" in the left panel.
- 3) Create two Advanced Storage Area Devices using two different local directories:
 - a. In Windows, create the following folders (the folders need to exist otherwise the creation of the Advanced Storage Area Devices will fail):
 - C:\filenet\ADVSD1
 - C:\filenet\ADVSD2
 - b. Open the "File System Storage Devices" tab of the "Target" object store by clicking "Target > Administrative > Storage > Advanced Storage > Advanced Storage Devices > File System Storage Devices" in the left panel. Then open the "New File System Storage Device" tab by clicking "New" in the "File System Storage Devices" tab.



- c. Enter "ADVSD1" as Display name, leave defaults for other fields, and click "Next".



- d. Enter " C:\filenet\ADVSD1" as Root directory path, leave defaults for other fields, and click "Next".



- e. Click “Finish” on the Summary page and click “Close” on the Success page after the Advanced Storage Device has been created successfully.

The screenshot shows the 'Object Store: Target' interface. On the left, a tree view shows the 'Target' node expanded, with 'Administrative', 'Storage', and 'Advanced Storage' nodes. Under 'Advanced Storage', 'File System Storage Devices' is selected. On the right, a 'Summary' table displays the following information:

Name	Value
Display name	ADVSD1
Site	Initial Site
Description	ADVSD1
Root directory path	C:\filenet\ADVSD1
Upper directory count	127
Lower directory count	97

- f. Click “Refresh” on the "File System Storage Devices" tab, and you will see that a new File System Storage Device named “ADVSD1” is listed.

The screenshot shows the 'Object Store: Target' interface. The 'File System Storage Devices' tab is selected. A table lists the storage devices:

	Display Name	Descriptive Text	Root Directory Path	Site
	ADVSD1	ADVSD1	C:\filenet\ADVSD1	Initial Site

- g. Repeat the steps b ~ f steps to create the second File System Storage Device:

- Name: ADVSD2
- Root directory path: C:\filenet\ADVSD2

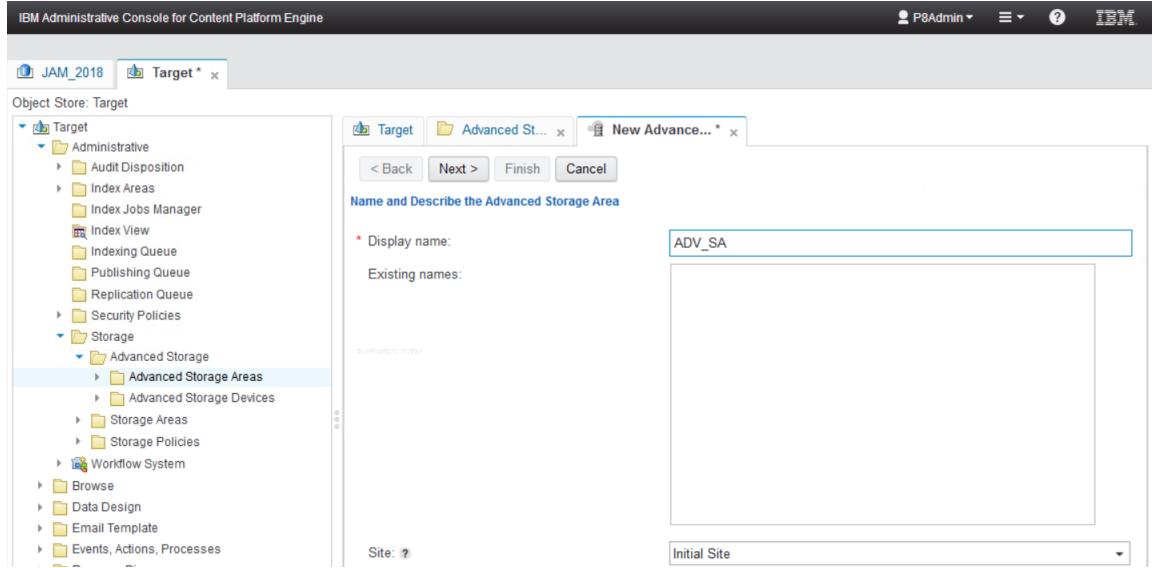
The screenshot shows the 'File System...' tab in the 'Target' section of the administrative console. On the left, a tree view shows 'Target' > 'Storage' > 'Advanced Storage' > 'File System Storage Devices'. A table lists existing devices: ADVSD1 (Display Name: ADVSD1, Descriptive Text: ADVSD1, Root Directory Path: C:\filenet\ADVSD1, Site: Initial Site) and ADVSD2 (Display Name: ADVSD2, Descriptive Text: ADVSD2, Root Directory Path: C:\filenet\ADVSD2, Site: Initial Site). A 'New' button is visible at the top of the table.

- 4) Create an Advanced Storage Area that stores content encrypted on these two devices:

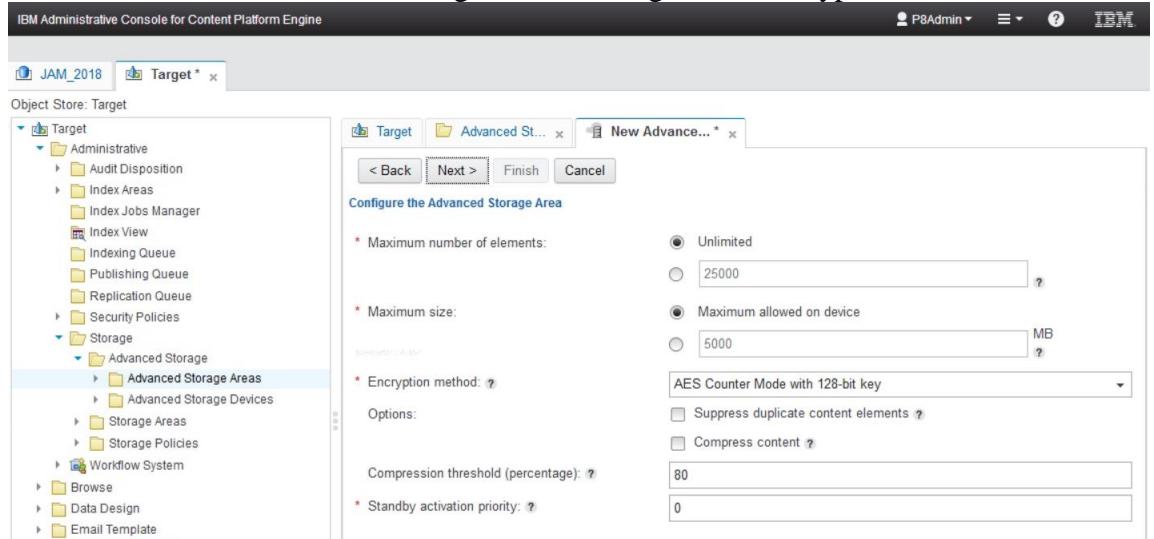
- a. Open the "Advanced Storage Areas" tab of the "Target" by clicking "Target > Administrative > Storage > Advanced Storage > Advanced Storage Areas" in the left panel, and then open the "New Advanced Storage Area" tab by clicking "New" in the "Advanced Storage Areas" tab.

The screenshot shows the 'Advanced St...' tab in the 'Target' section of the administrative console. On the left, a tree view shows 'Target' > 'Storage' > 'Advanced Storage' > 'Advanced Storage Areas'. A table titled 'New Advance...' is displayed with one row: 'No items to display'. A 'New' button is visible at the top of the table.

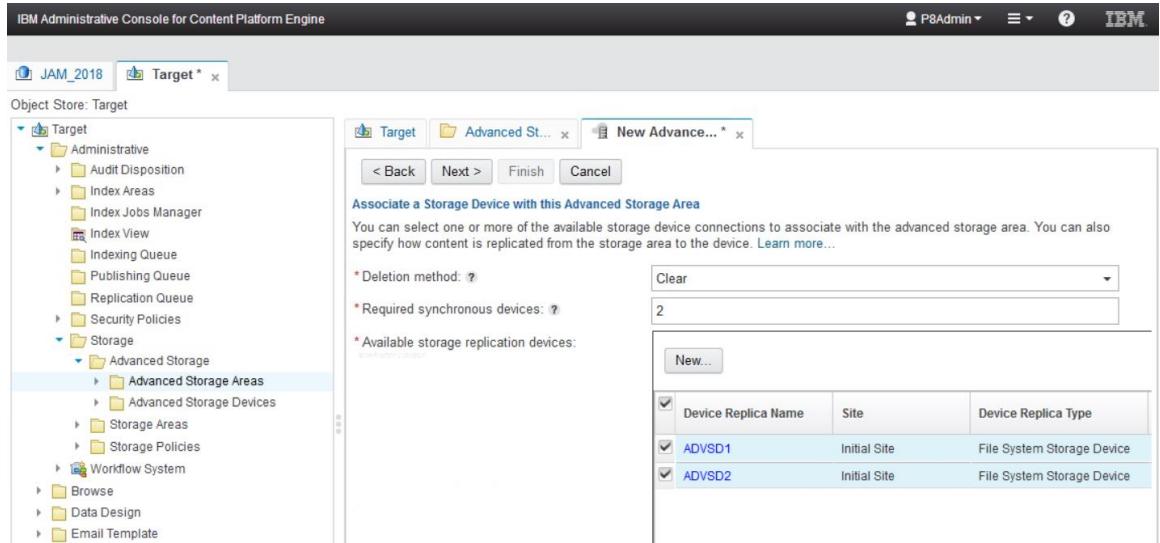
- b. Enter "ADV_SA" as Display name, leave defaults for other fields, and click "Next".



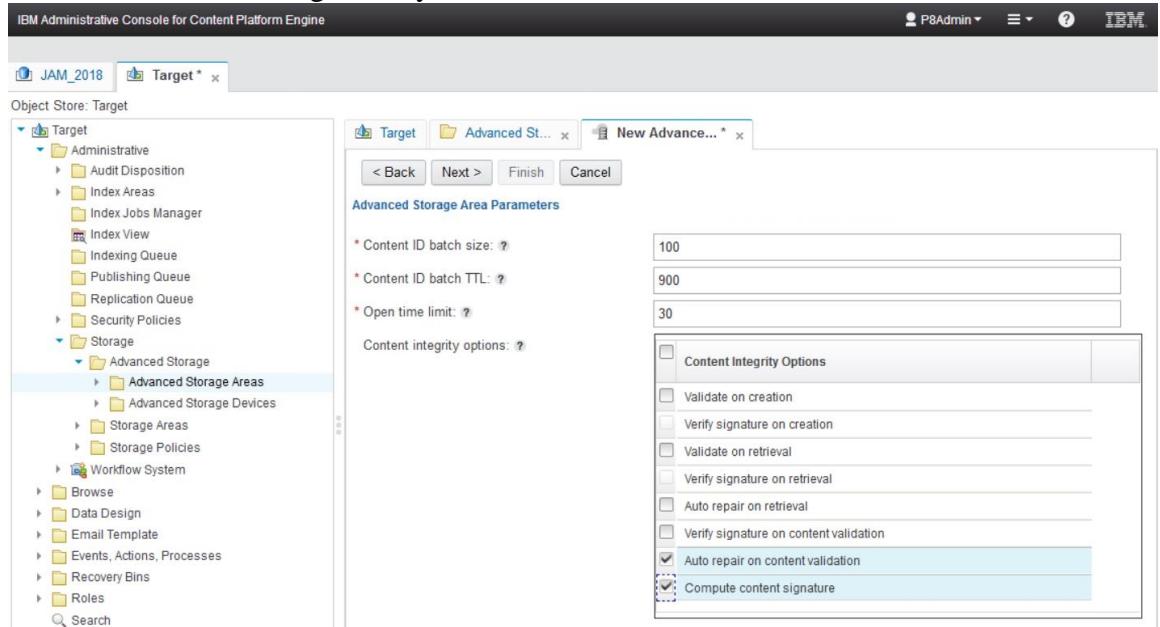
- c. Leave defaults for all fields and click "Next". Note: you can see "Encryption method" is set as "AES Counter Mode with 128-bit key" by default, which means that the storage area is configured as encrypted.



- d. Enter "2" as Required synchronous devices, and select both devices in Available storage replication devices, leave defaults for other fields, and click "Next".

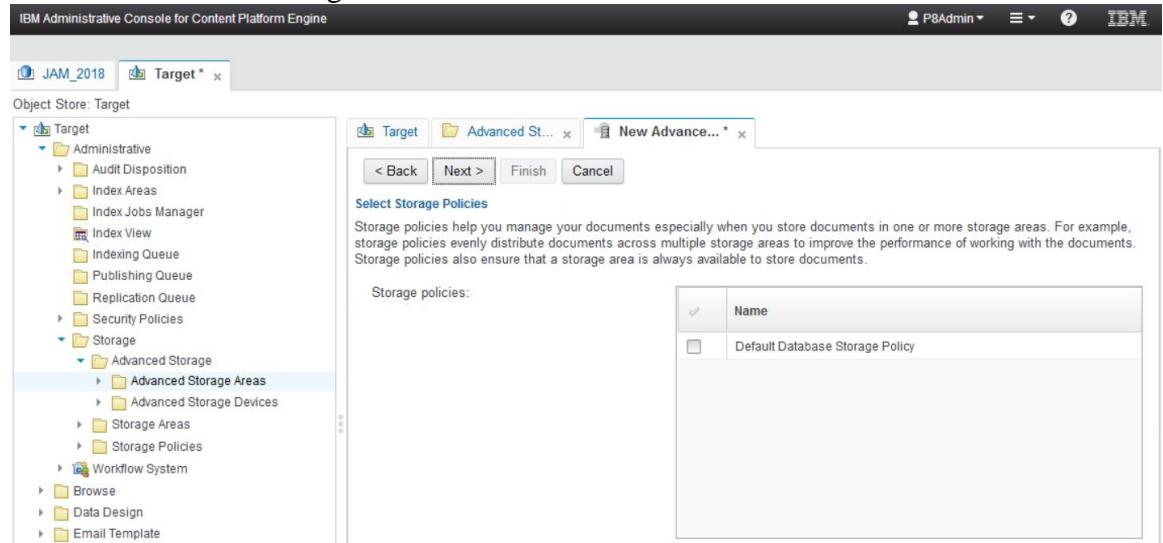


- e. Select "Compute content signature" in "Content integrity options" and click "Next". This will additionally compute and store a checksum, which can be used for checking validity of the documents.

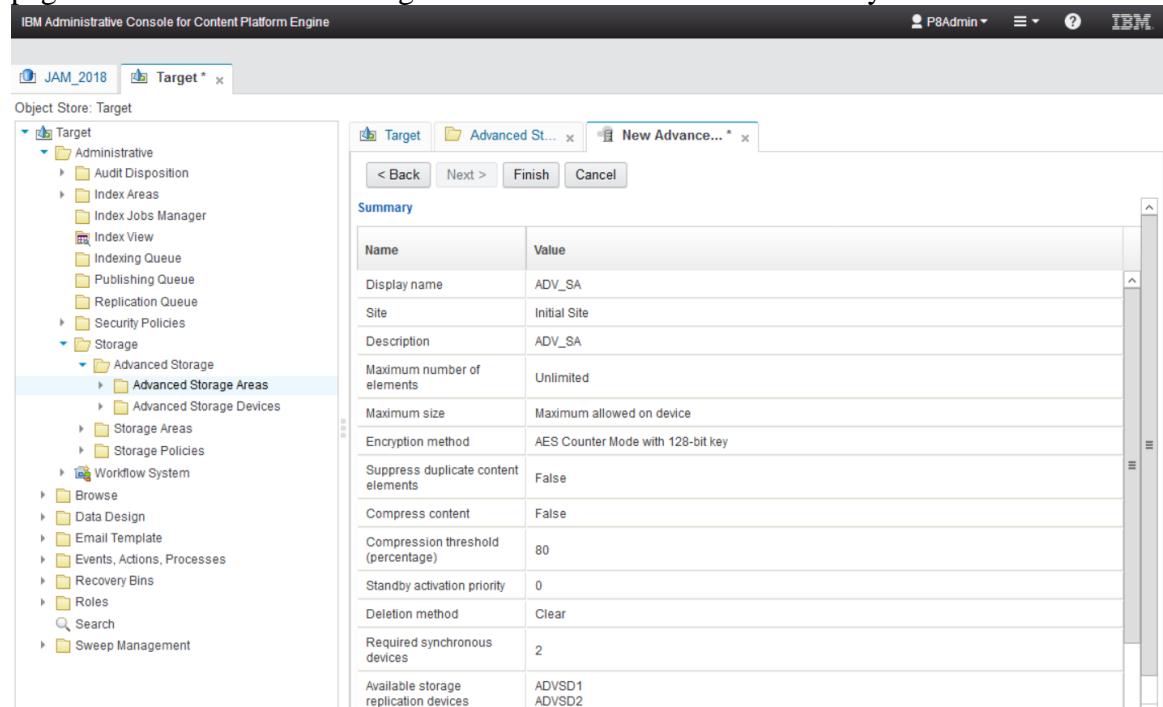


- f. Leave Storage policies as empty, click “Next”, and click “OK” on the popup dialog.

Note: you will create a new Storage Policy later which will be associated with the Advanced Storage Area.



- g. Click “Finish” on the Summary page and click “Close” on the Success page after the Advanced Storage Area has been created successfully.



- h. Click "Refresh" on the "Advanced Storage Areas" tab, and you will see that a new Advanced Storage Area named "ADV_SA" is listed.

The screenshot shows the 'Object Store: Target' interface. On the left, the navigation tree under 'Target' includes 'Administrative', 'Storage' (which is expanded to show 'Advanced Storage' and 'Advanced Storage Areas'), and 'Storage Policies'. On the right, the 'Advanced Storage Areas' tab is selected, showing a table with one row:

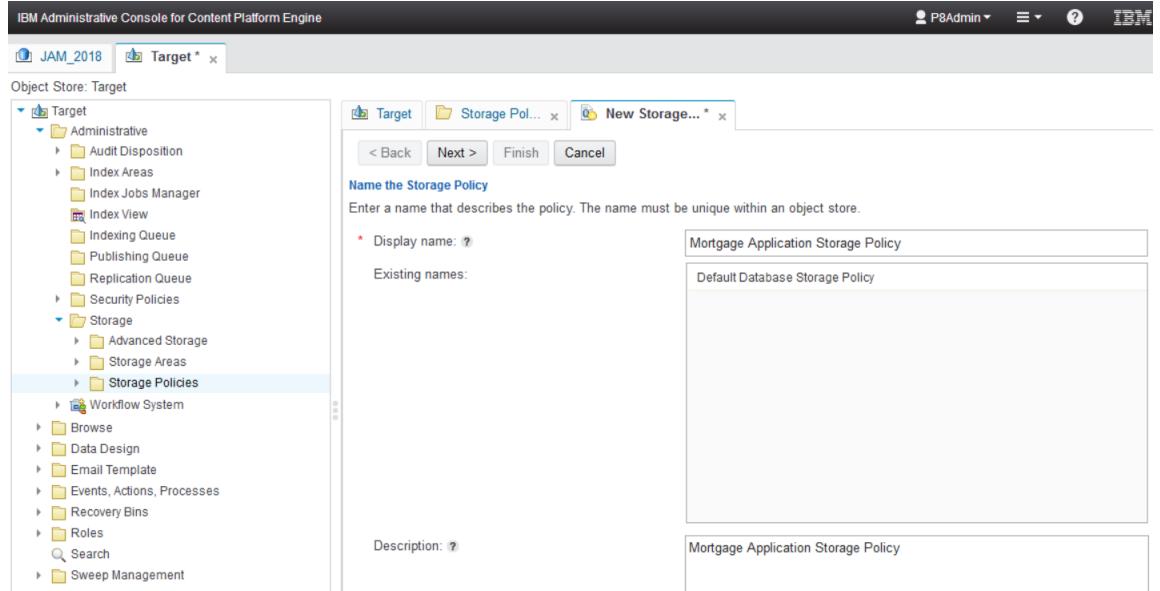
	Display Name	Status	Total Files	Total File Size	Delete Method	Synchronous Replicas Required	Synchronous Replicas Desired	Site
	ADV_SA	Open	0	0.0 KB	Clear	2	2	Initial Site

- 5) Assignment of Storage Areas to documents is done through the settings in the document class. Following best practices, the assignment will be done indirectly by creating a new storage policy, which points to the Advanced Storage Area, and which will be configured to be used in the document class. It is neither needed, nor a good idea to delete the database storage area, as it might be needed for storing other kinds of document classes.
- 6) Create a Storage Policy "Mortgage Application Storage Policy" for the Advanced Storage Area "ADV_SA":
 - a. Open the "Storage Policies" tab of the "Target" object store by clicking "Target > Administrative > Storage > Storage Policies" in the left panel. Next open the "New Storage Policy" tab by clicking "New" in the "Storage Policies" tab.

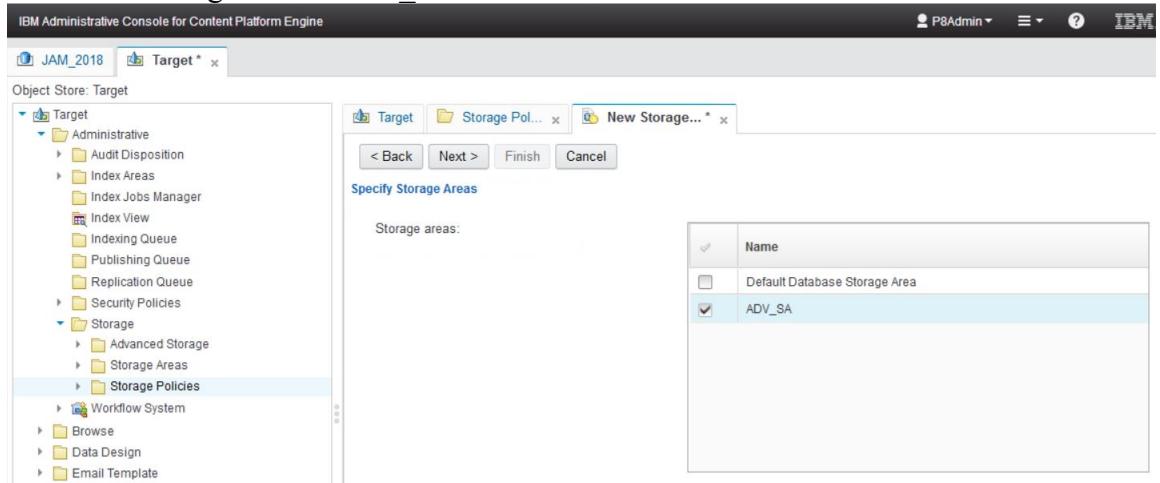
The screenshot shows the 'Object Store: Target' interface. The navigation tree under 'Target' includes 'Administrative', 'Storage' (expanded to show 'Advanced Storage' and 'Storage Areas'), and 'Storage Policies' (which is selected). On the right, the 'Storage Policies' tab is selected, showing a table with one row:

	Display Name	Description	Creator	Date Created
	Default Database Storage Policy	Default Database Storage Policy	Default Database Storage Policy	June 18, 2018 at 5:52:46 PM Coordinated Universal Time

- b. Enter "Mortgage Application Storage Policy" as Display name, leave defaults for other fields, and click "Next".



- c. Click "Next" on the "Select Content Storage Method" page.
d. Select the Storage Area "ADV_SA" and click "Next".



- e. Click “Finish” on the Summary page and click “Close” on the Success page after the Storage Policy has been created successfully.

The screenshot shows the 'Object Store: Target' interface. On the left, a tree view shows 'Target' expanded, with 'Storage Policies' selected. On the right, a 'Summary' tab is active, displaying the following table:

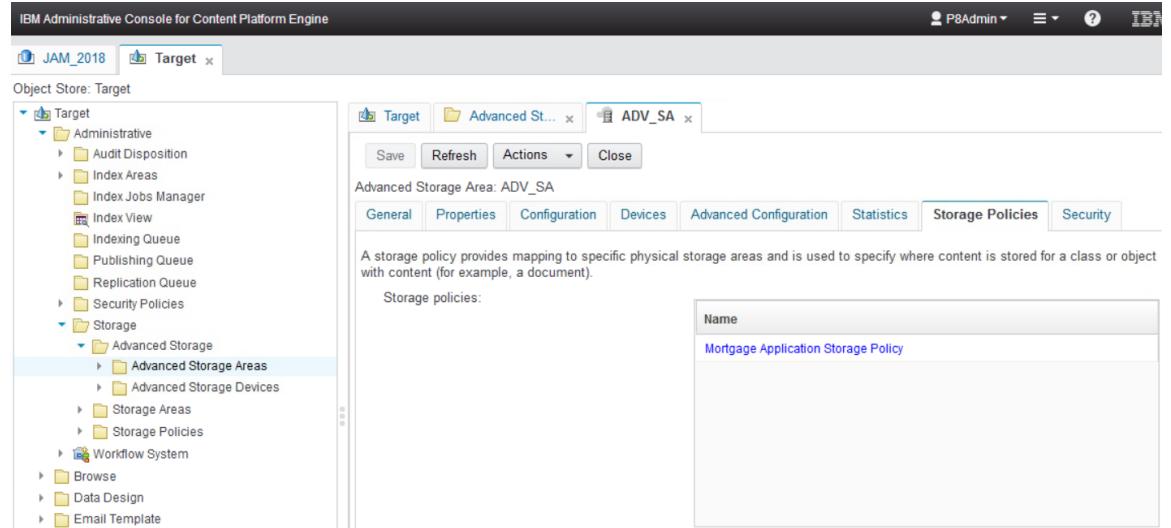
Name	Value
Display name	Mortgage Application Storage Policy
Description	Mortgage Application Storage Policy
Select the content storage method	Select the storage area from a list
Storage areas	ADV_SA

- f. Click “Refresh” on the "Storage Policies" tab, and you will see that a new Storage Policy named “Mortgage Application Storage Policy” is listed.

The screenshot shows the 'Object Store: Target' interface with the 'Storage Policies' tab selected. A table lists existing storage policies:

Display Name	Description	Creator	Date Created
Default Database Storage Policy	Default Database Storage Policy		June 18, 2018 at 5:52:46 PM Coordinated Universal Time
Mortgage Application Storage Policy	Mortgage Application Storage Policy	P8Admin	June 28, 2018 at 6:10:28 AM Coordinated Universal Time

- g. Open the Advanced Storage Area “ADV_SA” tab, click the “Storage Policies” sub-tab, and verify that “Mortgage Application Storage Policy” is listed there.

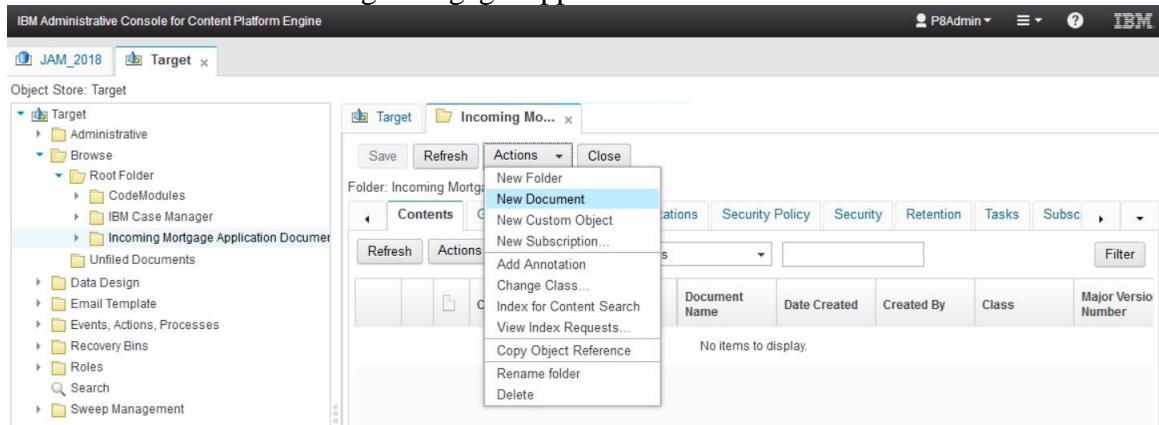


You finished creating an Advanced Storage Area with two Advanced Storage Area Devices and one Storage Policy. The incoming Mortgage Application documents will be stored in this Advanced Storage Area.

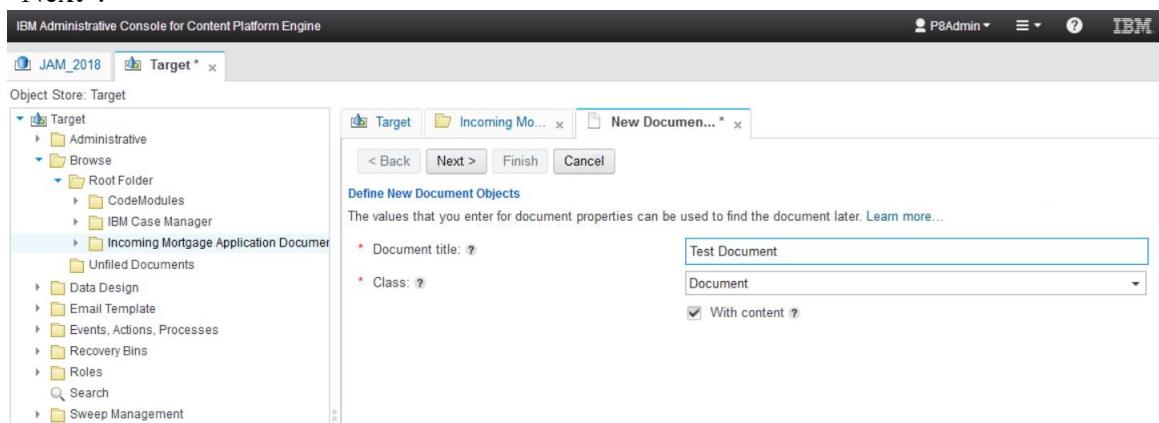
3.4 Create Storage Area – Verification Instructions

To verify successful completion of this exercise, you will first upload a document with document class “Document” to the Advanced Storage Area “ADV_SA” and into the folder “Incoming Mortgage Application Documents” which was created in Exercise 2. Second you will then find it on the local hard disk, forcefully delete one instance to then repair the inconsistency using the FileNet Content Consistency Checker tool.

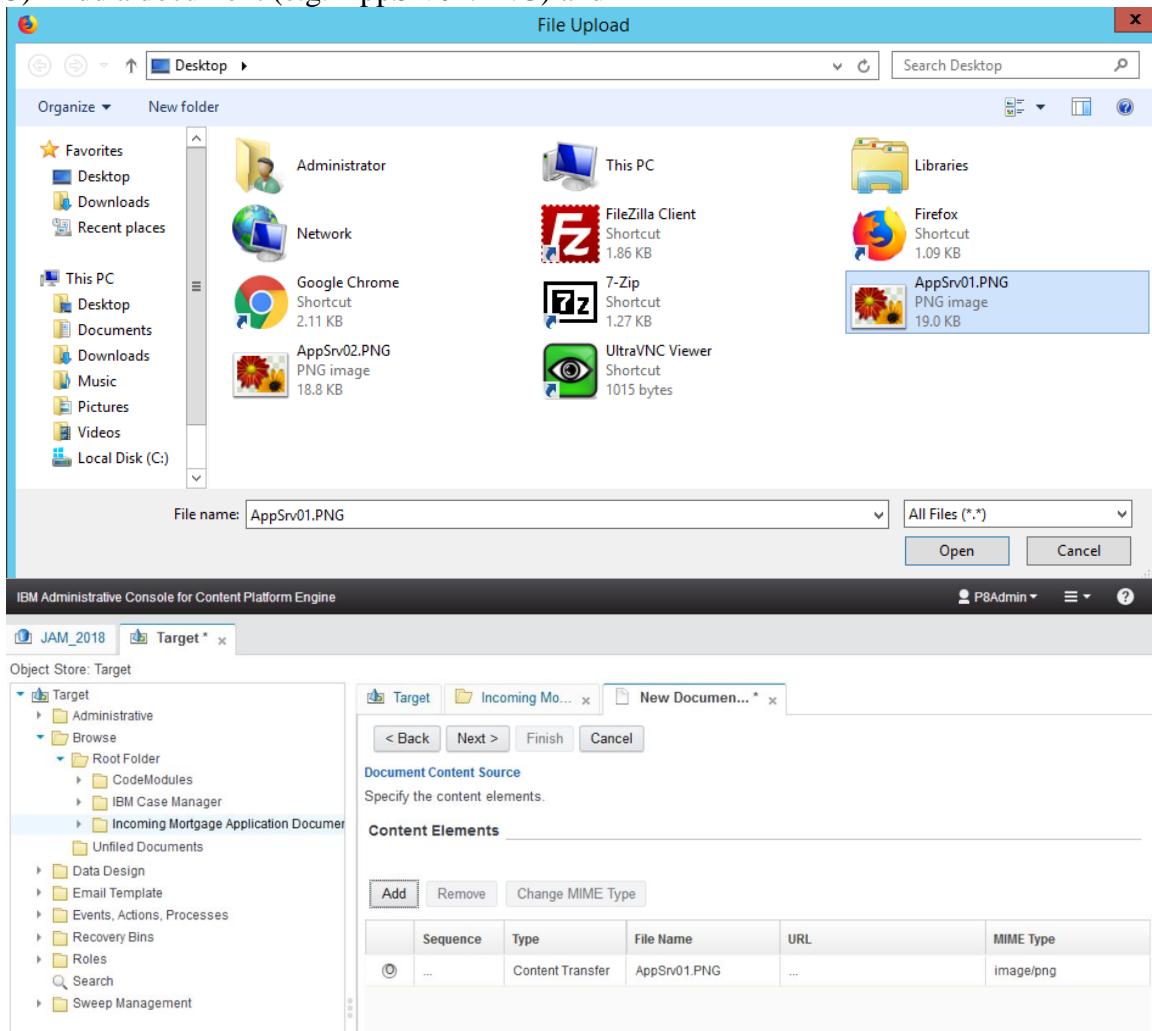
- 1) Open the folder “Incoming Mortgage Application Documents” by clicking “Target > Browse > Root Folder > Incoming Mortgage Application Documents” in the left panel. Next open the "New Document" tab by clicking "Actions > New Document" in the "Incoming Mortgage Application Documents" tab.



- 2) Enter "Test Document" as Display name, leave defaults for other fields, and click "Next".



- 3) Add a document (e.g. AppSrv01.PNG) and click “Next”.



- 4) Leave defaults for all fields on the next 3 pages (i.e. Object Properties, Document Content and Version, Specify Settings for Retaining Objects), and click “Next” each time.

- 5) Select “Mortgage Application Storage Policy” as Storage policy on the “Advanced Features” page and click “Next”.

Advanced Features

Specify additional options that you can assign to the document you are adding to the object store.

Storage area: ?	
Storage policy: ?	Mortgage Application Storage Policy
Security policy: ?	
Lifecycle policy: ?	
Replication group: ?	

- 6) Click “Finish” on the Summary page and click “Close” on the Success page after the document was successfully added.

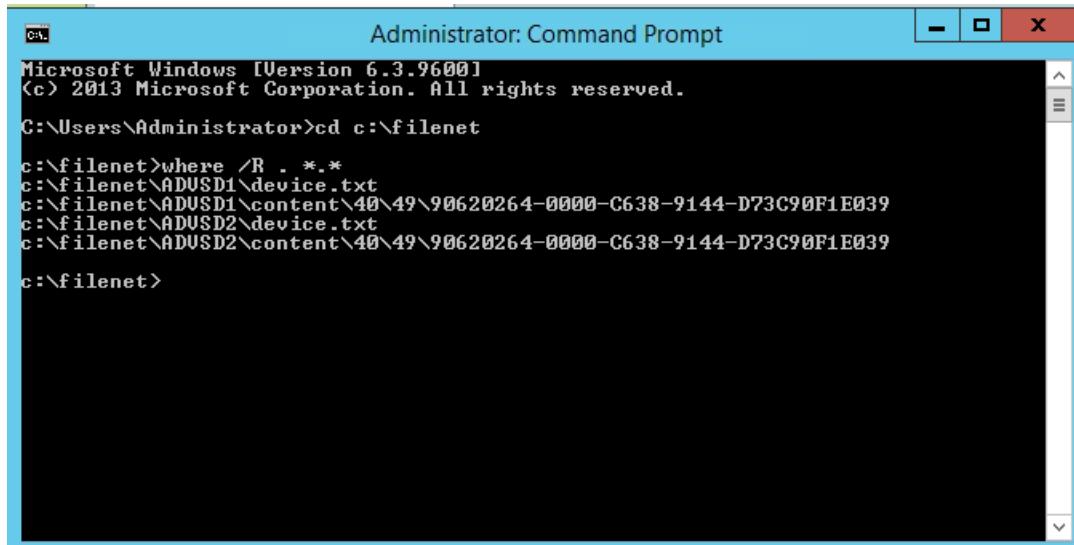
Name	Value
Document title	Test Document
Class	Document
With content	True
Save as reservation	False
Create minor version	False
Create as compound document	False
Retention date	None
Storage policy	Mortgage Application Storage Policy
Content elements	AppSrv01.PNG
MIME type	image/png
Classify document	false

- 7) Open the folder “Incoming Mortgage Application Documents”, choose the “Contents” tab, click “Refresh” and verify that “Test Document” is listed there.

Containment Name	Document Name	Date Created	Created By	Class	Major Version Number
	Test Document	June 28, 2018 at 6:25:27 AM Coordinated Universal Time	P8Admin	Document	1

- 8) Open the Advanced Storage Area “ADV_SA” tab, click the “Statistics” sub-tab, and verify that “Total files” is 1. (It might be necessary to click “Refresh” if you did not previously close the tab.)

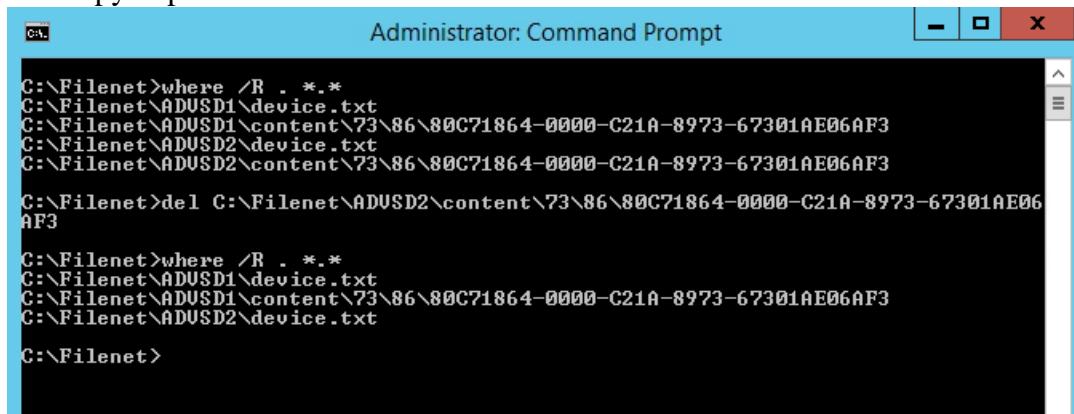
- 9) Open Command Prompt and change to directory “c:\filenet”. Next run the command “where /R . *.*”. You will see 1 file except for the device.txt file on both ADVSD1 and ADVSD2, which is the stored content of the uploaded “Test Document”.



```
Administrator: Command Prompt
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>cd c:\filenet
c:\filenet>where /R . *.*
c:\filenet\ADUSD1\device.txt
c:\filenet\ADUSD1\content\40\49\90620264-0000-C638-9144-D73C90F1E039
c:\filenet\ADUSD2\device.txt
c:\filenet\ADUSD2\content\40\49\90620264-0000-C638-9144-D73C90F1E039
c:\filenet>
```

- 10) Remove one of the content files, not the “device.txt” file, using the del command.
Use copy & paste for the name.



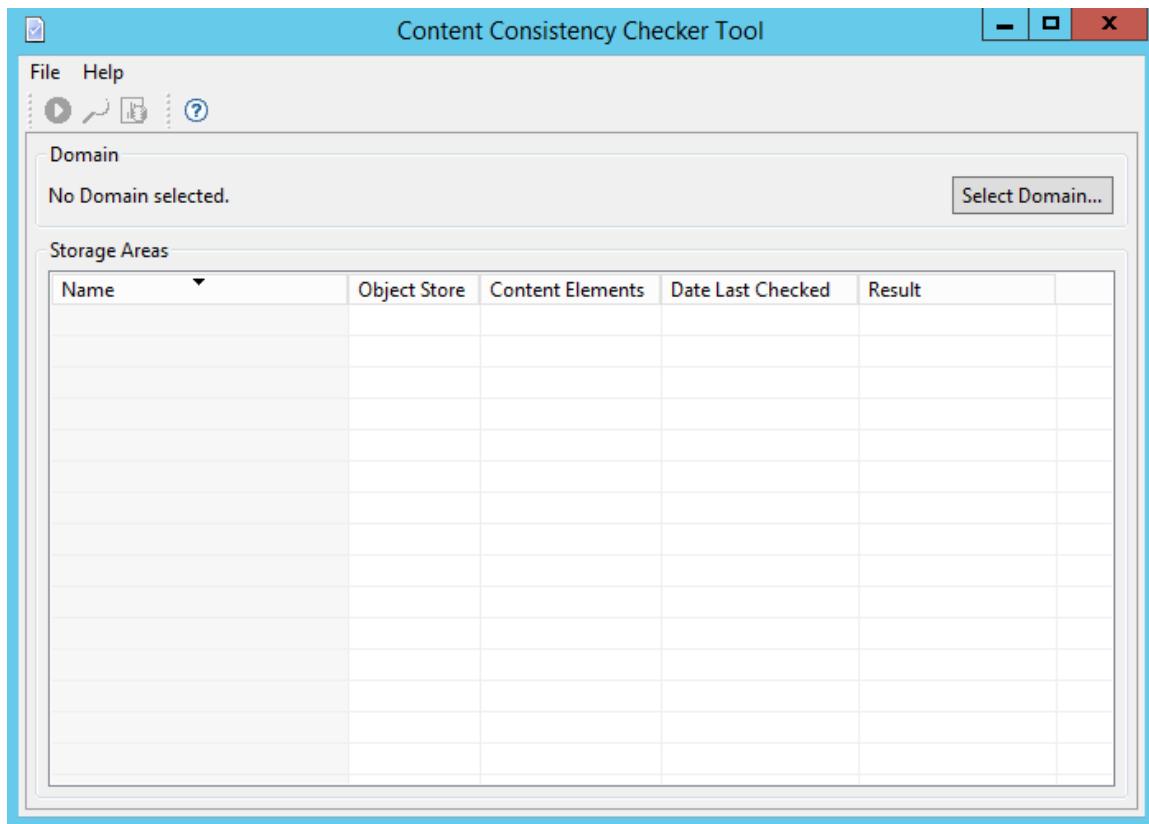
```
Administrator: Command Prompt
C:\Filenet>where /R . *.*
C:\Filenet\ADUSD1\device.txt
C:\Filenet\ADUSD1\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3
C:\Filenet\ADUSD2\device.txt
C:\Filenet\ADUSD2\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3

C:\Filenet>del C:\Filenet\ADUSD2\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3

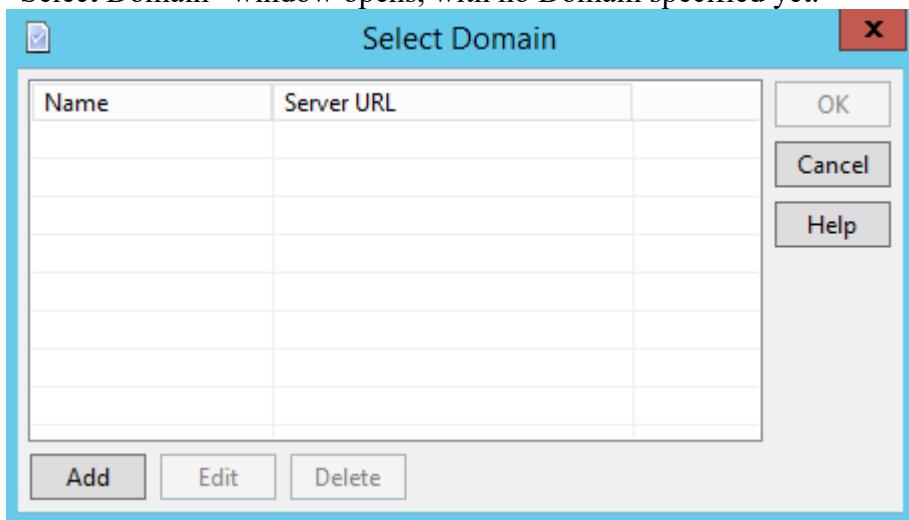
C:\Filenet>where /R . *.*
C:\Filenet\ADUSD1\device.txt
C:\Filenet\ADUSD1\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3
C:\Filenet\ADUSD2\device.txt

C:\Filenet>
```

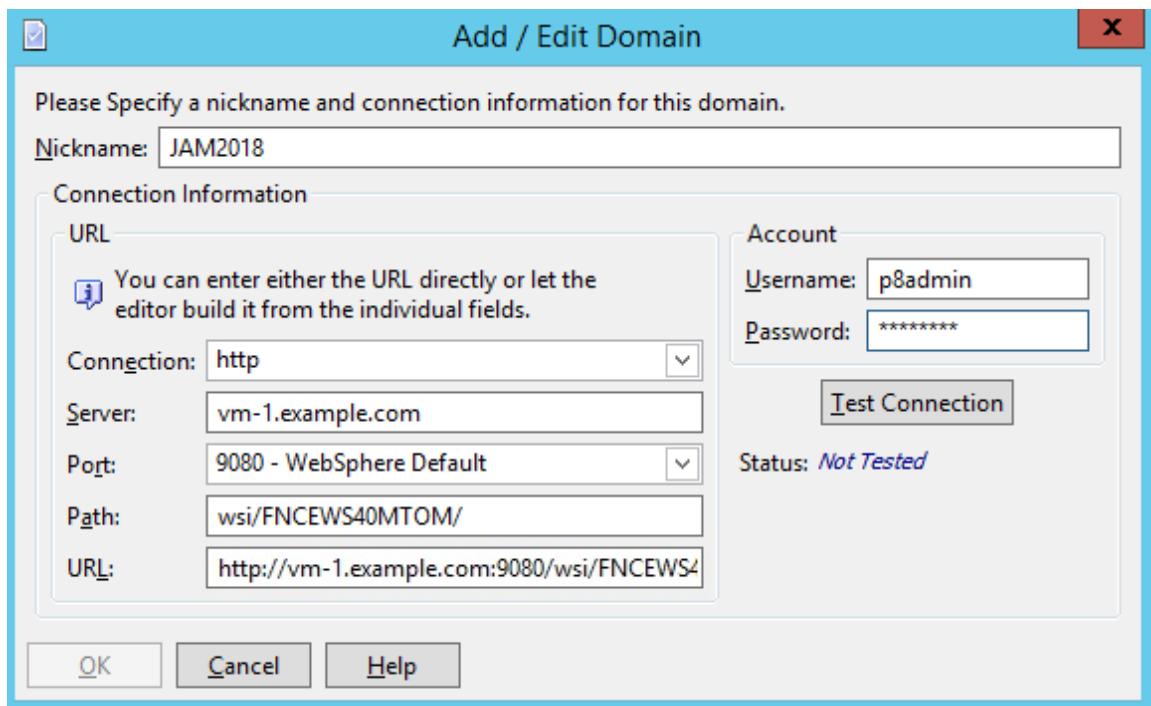
- 11) From the Start Menu / Start Page, invoke the FileNet Content Consistency Checker tool from the FileNet / ICN Group.



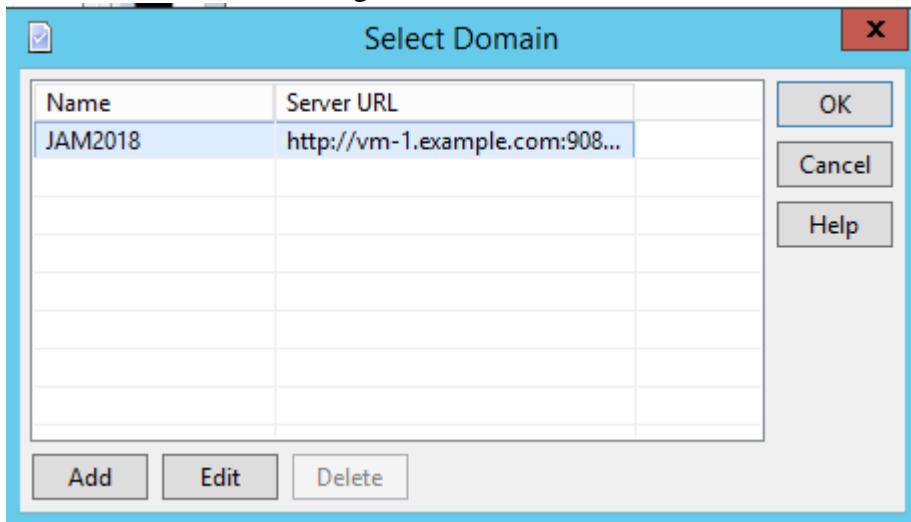
- 12) Click “Select Domain” to choose the FileNet Content Engine Domain to use. The “Select Domain” window opens, with no Domain specified yet.



- 13) Click “Add” and enter the connection details for the JAM2018 domain:
Nickname: JAM2018
Server: vm-1.example.com
Username: p8admin
Password: Think4me



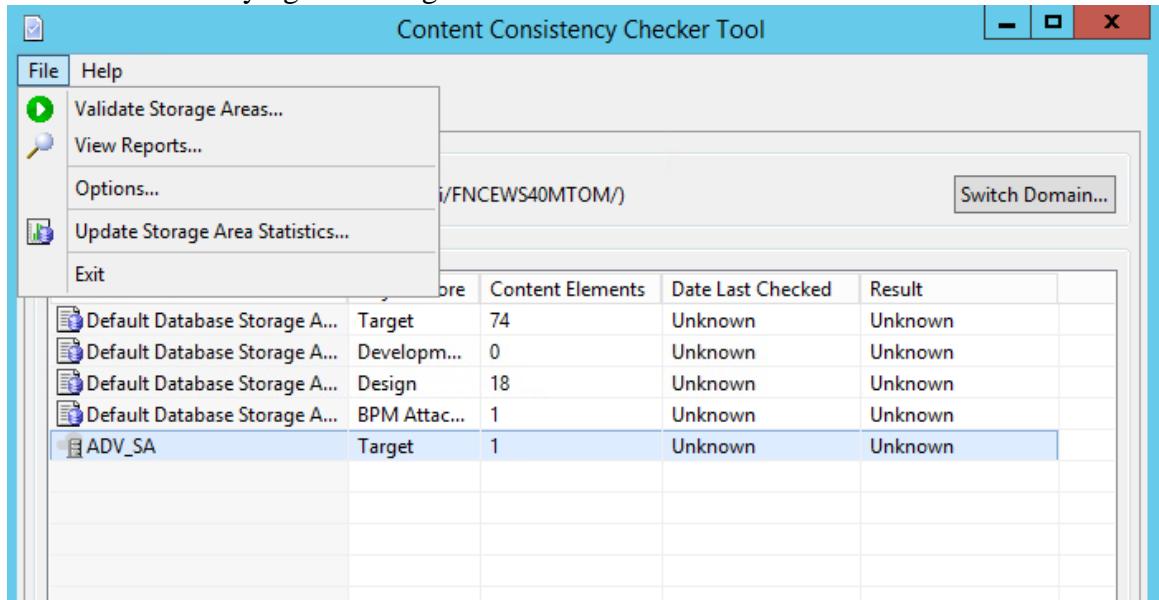
- 14) Click “Test Connection” and confirm that the login succeeds. Click “OK” in the “Add / Edit Domain”-dialog. Select the Domain and click “OK”.



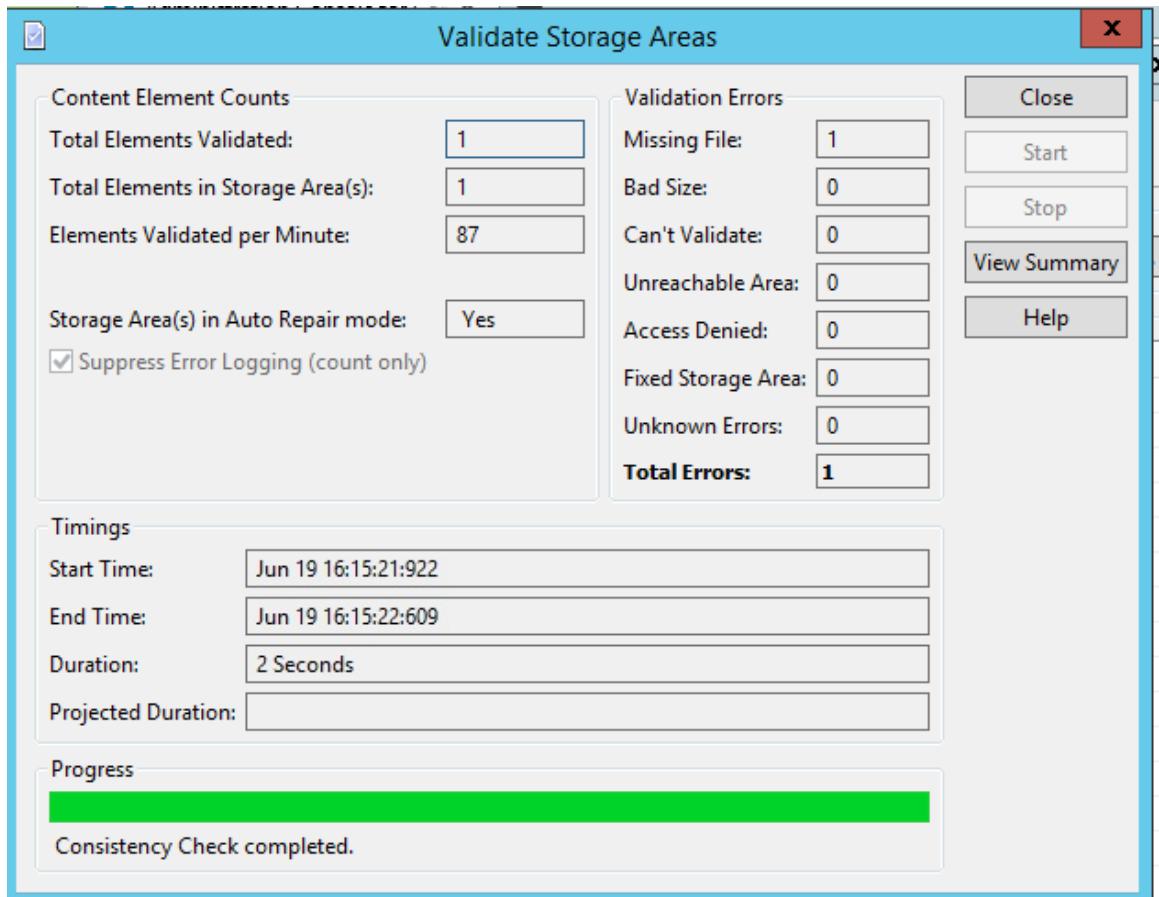
Before running Consistency checker in a production system, you might need to review which part of the documents to review, and might need to create indexes on the database to enhance consistency checker performance, read more about it in the documentation https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.performance.doc/p8ppt329.htm.

In the options, you can also assign the directory where the consistency checker report will be generated. However, in this case we don't need this report.

- 15) In the Content Consistency Checker Tool main window, select the Advanced Storage Area “ADV_SA” and select “Validate Storage Areas...” from the main menu to start verifying the Storage Area.



- 16) Leave the default values for all options and click “Start” to run the validation. Notice one error will be found:



- 17) When the check completed, check the storage areas again. You will see that the missing file is present again and the corruption is fixed.

The screenshot shows an 'Administrator: Command Prompt' window with a blue title bar. The command line interface displays the following sequence of commands and their outputs:

```
C:\Filenet>where /R . *.*
C:\Filenet\ADUSD1\device.txt
C:\Filenet\ADUSD1\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3
C:\Filenet\ADUSD2\device.txt
C:\Filenet\ADUSD2\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3

C:\Filenet>del C:\Filenet\ADUSD2\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3

C:\Filenet>where /R . *.*
C:\Filenet\ADUSD1\device.txt
C:\Filenet\ADUSD1\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3
C:\Filenet\ADUSD2\device.txt

C:\Filenet>where /R . *.*
C:\Filenet\ADUSD1\device.txt
C:\Filenet\ADUSD1\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3
C:\Filenet\ADUSD2\device.txt
C:\Filenet\ADUSD2\content\73\86\80C71864-0000-C21A-8973-67301AE06AF3

C:\Filenet>_
```

3.5 Create Storage Area – Summary

In this exercise you have:

- 1) Created two Advanced Storage Area Devices for different local directories: ADVSD1 & ADVSD2.
- 2) Created an Advanced Storage Area that stores content encrypted on these two devices: ADV_SA.
- 3) Created a Storage Policy for the Advanced Storage Area "ADV_SA": Mortgage Application Storage Policy.
- 4) Uploaded a document to the folder "Incoming Mortgage Application Documents", which got stored in the Advanced Storage Area "ADV_SA".
- 5) Forcefully deleted one of the files in a Storage Area Device so that running the FileNet Content Consistency Checker tool could repair the corruption.

4 Exercise: Deploy Classes

Duration approx.: 1 hour

4.1 Deploy Classes – Introduction

Documents and other entities in FileNet Content Platform Engine are referred to as Objects. Documents, or more generally all Objects have common properties, e.g. default security settings, default Storage Area and Storage Policy for defining where the content should be stored, common metadata, i.e. properties, and the like. The common properties are defined in a special object in FileNet Content Platform, the “Class Definition”. For details on the Class Definitions, please refer the documentation

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.dev.ce.doc/class_concepts.htm.

The “Class Definition” refers to other entities, the Property Definitions, which define details about the properties that are allowed in the instances of the classes. This is where it is for example defined, that the customer name property has a specific name, is of type String, and may only have a specific maximum string length. The Property Definitions are automatically generated from so-called “Property Templates”, whenever a Property is added to a class definition. So, when you need a Property named “Customer Name” in more than one class, by re-using the same Property Template for each, the metadata for Customer Name can be the same, e.g. it can have same type “String”, same string length, same Translations of its Label to the different languages, and also same column name definition in the Object Store database. For more details on Property Templates please see the documentation

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.dev.ce.doc/property_concepts.htm#property_concepts_property_templates.

In the exercise, you will review the class definitions, and the property templates. The scenario assumes that these class definitions have been defined in a development environment (modelled here by another Object Store). They need to be deployed into the “Target” object store, which will be used later for storing the Mortgage Application documents. For this deployment, the FileNet Deployment Manager will be used. Its concepts are described in the documentation

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.common.deploy.doc/p8pdb023.htm as well as its usage

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.common.deploy.doc/p8pdb020.htm.

Additionally, to the above explanations, it is also possible to automate FileNet Deployment Manager by using its command line interface. The command line interface is described below:

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.common.deploy.doc/usethecommandlineutilities.htm

4.2 Deploy Classes – High-Level Steps

In this exercise you will access the following tools / resources

Tool	Location / URL
Content Platform Engine Administrative Console (ACCE)	http://vm-1.example.com:9080/acce
FileNet Deployment Manager	Find Shortcut on Start Page in the FileNet / ICN group

The exercise was divided into the following 6 parts, find the High-level steps for them below, and the detailed steps in section 4.3.

1. Review Class Definitions and Property Templates

High-level steps: (Detailed steps in section 4.3.1)

- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Development” object store
- Navigate to the “Mortgage Application Attachment” document class, review its Property Definitions , find its Property named “Id”, and note the value.
- Review the two subclasses “Loan Application Form” and “Payslip” and review their “Property Definitions”
- Optionally you can choose to review their inherited property definitions as well and check that the property definitions from the “Mortgage Application Attachment” document class are also listed.
- Review the Property Definition of the “Payment Date” Property and determine the symbolic name of the property

2. Export the Classes and Property templates

High-level steps: (Detailed steps in section 4.3.2)

- Start the FileNet Deployment Manager
- Create a new Environment definition
- Add an Export Manifest and add to it the Mortgage Application Attachment document class
- Run the Export

3. Prepare the Source Environment Half-Maps

In general, data structures between source and target environment of a deployment are rarely the same: The environments might use different LDAP servers, different user or group names, different Storage Areas, et cetera. For preparing the import, the data in the export file needs to be mapped to match the import environment. This mapping step is auto-generated from so-called “Half-Map” Information. Information that is extracted from the Source and later from the Target environment of a deployment.

High-level steps: (Detailed steps in section 4.3.3)

- Export the object store Half-Map Information from the export file itself.
- Export the Security Half-Map Information from the export file itself.
- Create a Deploy Package (ZIP File) with all information required for importing the classes

4. Define Target Environment and Target Environment Half-Maps

High-level steps: (Detailed steps in section 4.3.4)

- Simulate working on another environment by closing and restarting Deployment Manager, and creating a new Deployment tree.
- Import the data from the ZIP file, thereby creating a source environment with the export data, which is not connected to any FileNet Content Platform Engine.
- Create the target environment for importing the data to
- For the Half-Maps export the required data directly from the target environment, for the Object Stores and the Security Half Maps.

5. Define Source-Target Pair

High-level steps: (Detailed steps in section 4.3.5)

- Defining a Source-Target Pair for the Source and the Target environment.
- Apply the generated mappings by converting the deployment dataset file.
- Run the Impact Analysis and review the Impact Analysis report.

6. Run the Import

High-level steps: (Detailed steps in section 4.3.6)

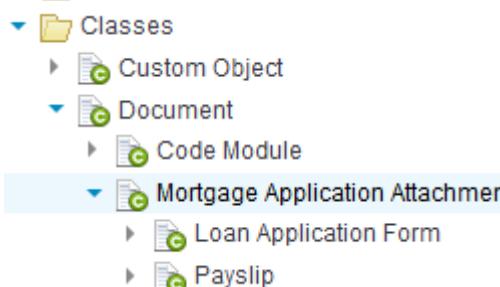
- Import the converted deployment dataset file
- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Target” object store
- Review availability of the “Mortgage Application Attachment” class, and its subclasses, with the same Id values.

4.3 Deploy Classes – Step by Step Instructions

4.3.1 Review Class Definitions and Property Templates

To get started with this exercise, execute the following steps:

- 1) Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) In the navigation pane (left side), click on “Development” Object Store.
- 3) In the navigation pane of the “Development” object store, open “Data Design > Classes > Document”. Click on “Mortgage Application Attachment”.



- 4) The class opens on the right side. Please check the “Property Definitions” tab. It should show some of the properties, which are common for all Mortgage Application documents.

Property	Data Type	Is Name	Is Inherited
Extended Retention Required	Boolean		
Customer Name	String		

- 5) Review the “Properties” tab and find the Property named “Id”. This is the internal ID of the class by which it might be referenced by other applications.

Development Mortgage Ap... x

Save Refresh Actions ▾ Close

Class Definition: Mortgage Application Attachment

	General	Properties	Property Definitions	Default Instance Security	Security Policy	Secu
Learn more...						
*	Property Name	Property Value				
	ID	{1040DF63-0000-C61E-AA8D-11DE1F4AC453}				<input type="button" value="▼"/>
	Name	Mortgage Application Attachment				<input type="button" value="▼"/>

- 6) In the navigation pane (left side), you see that the “Mortgage Application Attachment” class has two subclasses, “Loan Application Form” and “Payslip”. Review their “Property Definitions” tabs.

Development Mortgage Ap... x Loan Appli... x

Save Refresh Actions ▾ Close

Class Definition: Loan Application Form

	General	Properties	Property Definitions	Default Instance Securi
Add Remove Propagate				
<input type="checkbox"/> Display inherited properties <input type="checkbox"/> Display system properties				
	Property	Data Type	Is Name	Is Inheri
<input type="checkbox"/>	Date of Birth	Date Time		
<input type="checkbox"/>	Loan Amount	Float		
<input type="checkbox"/>	Property Address	String		
<input type="checkbox"/>	Purchasing Price	Float		

Class Definition: Payslip

	Property	Data Type	Is Name	Is Inherited	Is System
<input type="checkbox"/>	Payment Date	Date Time			
<input type="checkbox"/>	Net Income	Float			

- 7) Optionally you can choose to review their inherited property definitions as well and check that the property definitions from the “Mortgage Application Attachment” document class are also listed.
- 8) Click on the “Payment Date” to find out more about the Property Definition. Here you can find the Symbolic Name of the property as well. The Symbolic Name is the other form of accessing an Object, from other applications, when not

using the Id.

Property Definition

General	Alias IDs	More	Modification Access
Display name: ?	Payment Date		
Symbolic name: ?	MA_PaymentDate		
Description: ?	Payment Date		
Data type: ?	Date Time		
Cardinality:	Single		
Primary Id:	{43BC4EA6-C829-4E0C-8F5A-FF17634F914B}		
Used in classes: ?			
<input type="checkbox"/> Is system owned			

4.3.2 Export the Classes and Property templates

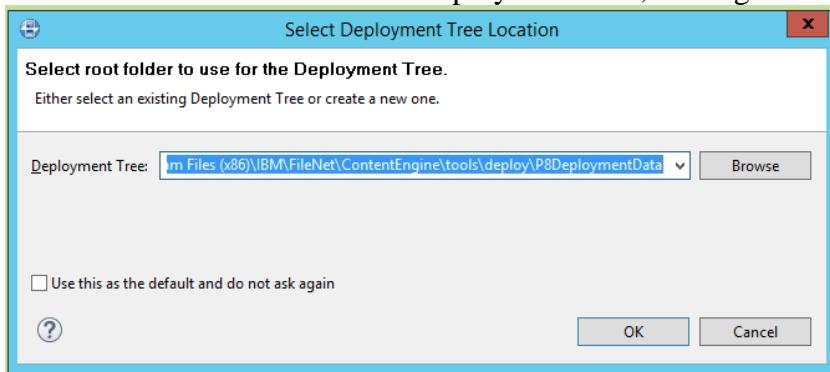
This part of the exercise will be performed in the FileNet Deployment Manager (FDM).

Start it by selecting windows “Start Menu / Start Page” and clicking Deployment Manager.

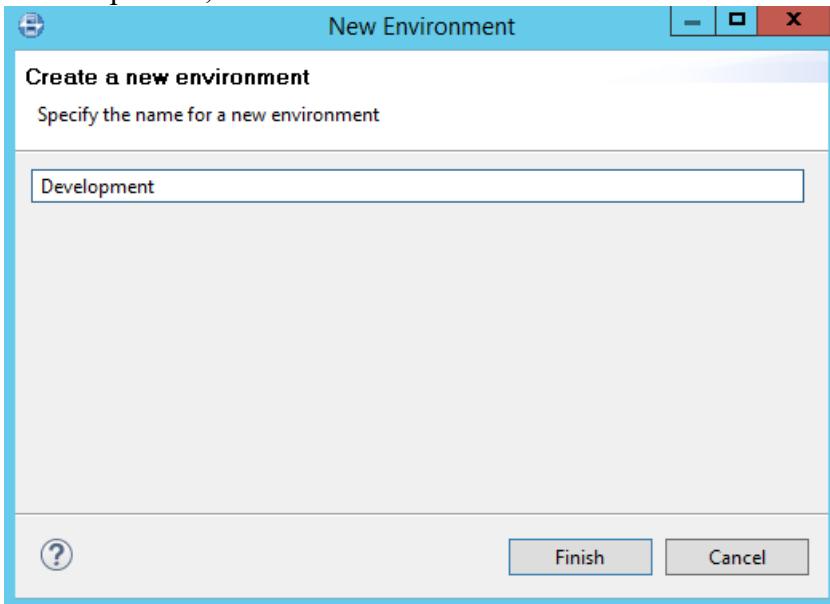


Then run following steps:

- 1) Click “OK” when asked for the Deployment Tree, leaving the default path value.

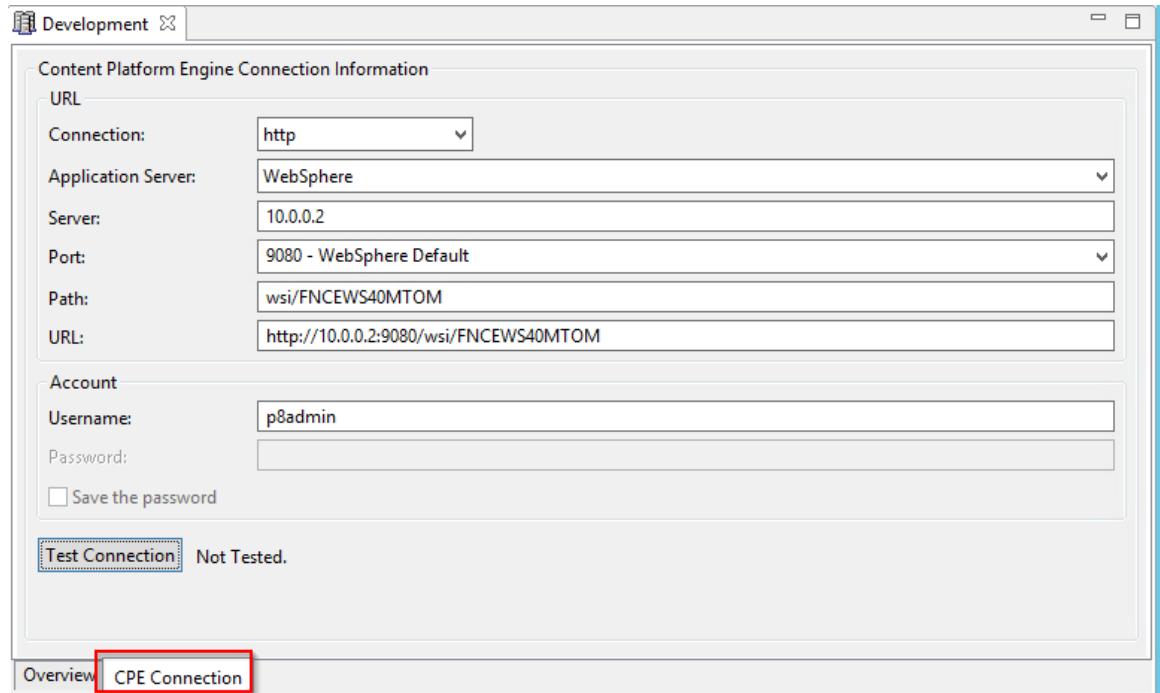


- 2) Close the Welcome Page.
- 3) Right-Click on “Environments” and select “New -> Environment”. Name it “Development”, click “OK”.



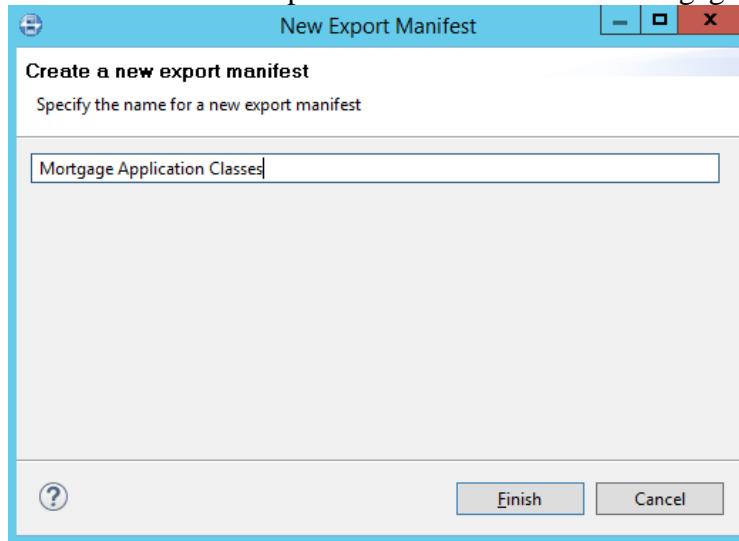
- 4) Double-click the new Environment and select the “CPE Connection” tab. Fill out the details:

Server: vm-1.example.com
Port: 9080
Path: wsi/FNCEWS40MTOM
Username: p8admin



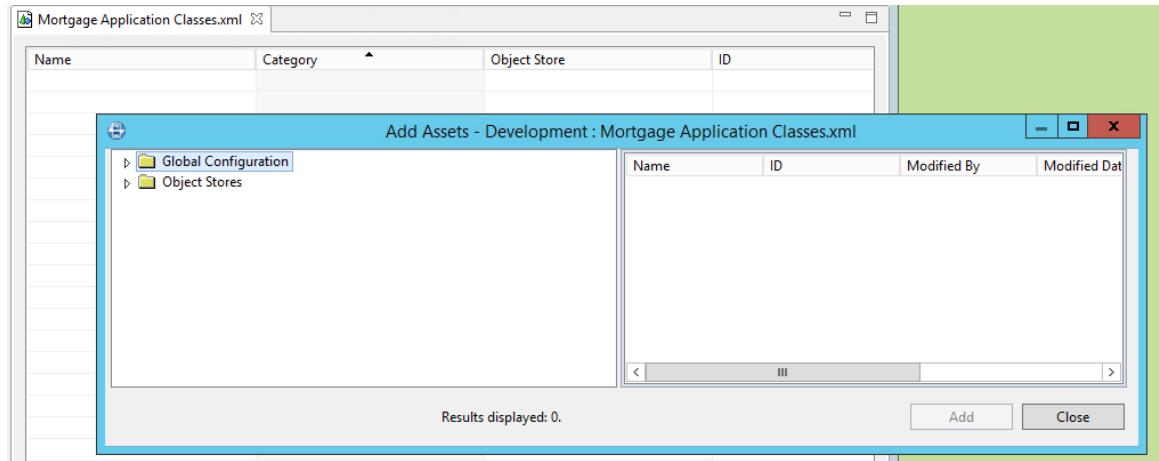
After saving the changes you can test the connection by entering the password (Think4me). Close the Environment window when the connection has been made.

- 5) Expand the Environment in the navigator view. Right-click on Export Manifests, and select “New > Export Manifest”. Name it “Mortgage Application Classes”.

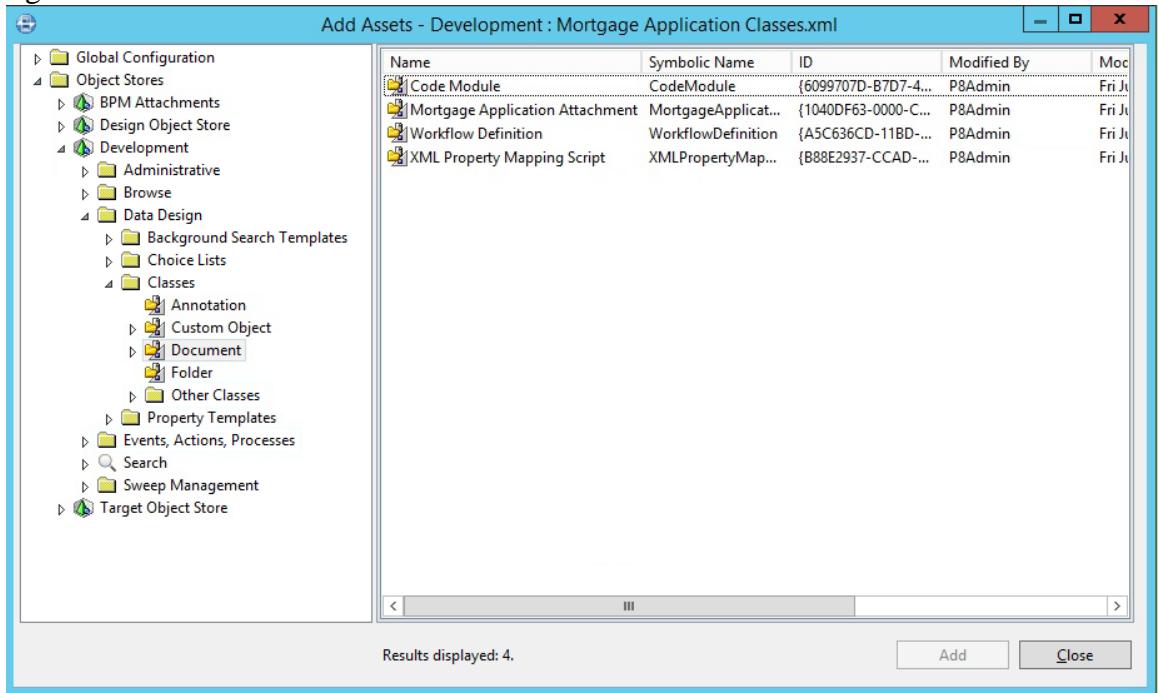


- 6) Double-click on the newly added Export Manifest to open it. Select “Add Assets” from the “Export Manifest” menu in the menu bar. This opens the “Add Assets”

window.

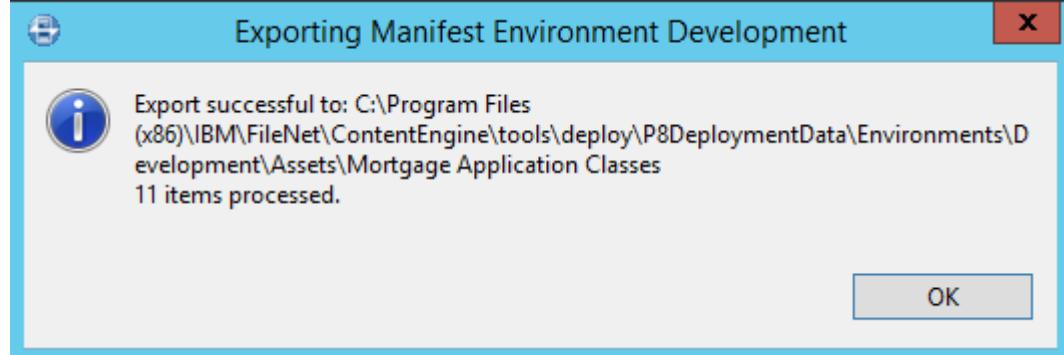


- 7) Open the following entities on the left-hand side: “Object Stores > Development > Data Design > Classes”. Select the “Document” class. Its subclasses appear on the right-hand side.



- 8) On the right-hand side, click on “Mortgage Application Attachment” and click “Add” to add it to the Export Manifest.
No further assets are required, Deployment Manager will automatically find and export everything required to define the class and its subclasses in the “Target” Object Store, once it is imported.
- 9) Close the “Add Assets” window.
- 10) Save the export manifest.

- 11) Select the Export action, by either right-clicking on the Export Manifest, or choosing the command from the File menu. Leave default values in the entry fields and click “OK”. When the data is exported, you will see the number of entities which were exported.

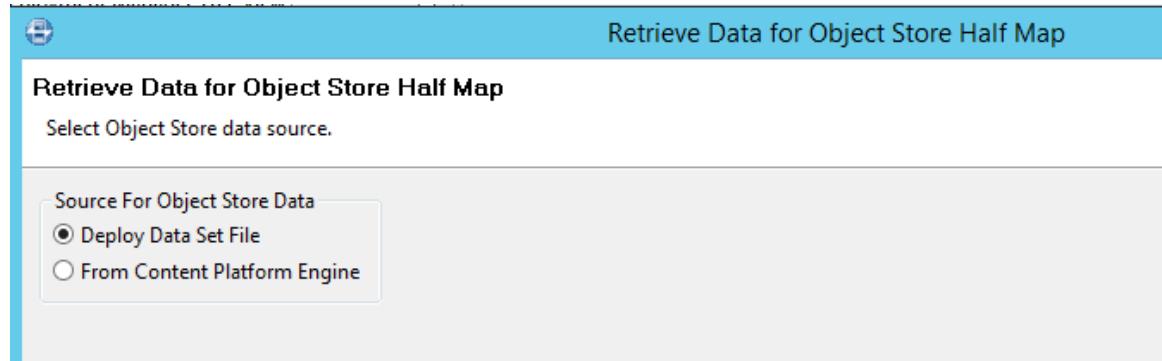


4.3.3 Prepare the Source Environment Half-Maps

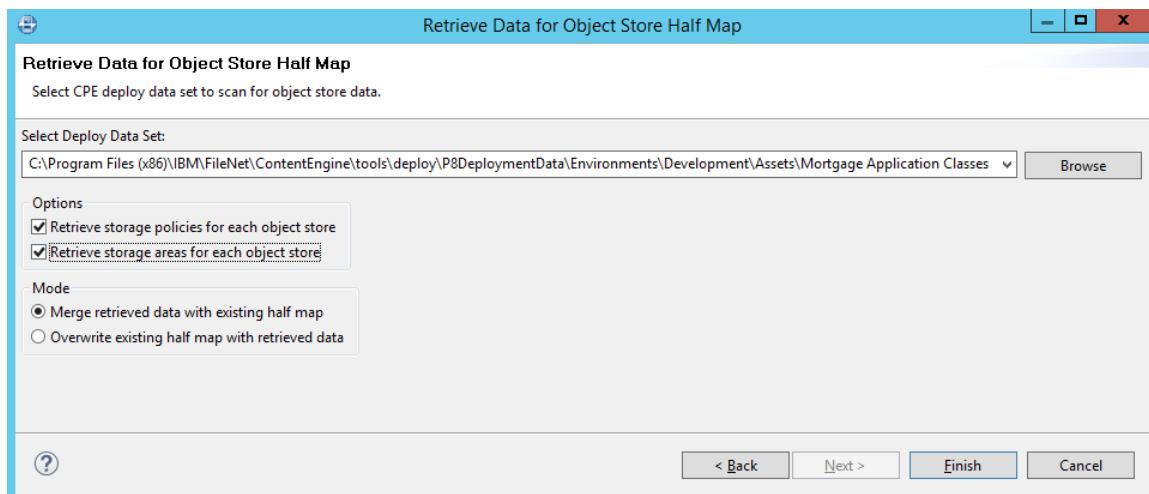
In general, data structures between source and target environment of a deployment are rarely the same: The environments might use different LDAP servers, different user or group names, different Storage Areas, et cetera. For preparing the import, the data in the export file needs to be mapped to match the import environment. This mapping step is auto-generated from so-called “Half-Map” Information. Information that is extracted from the Source and later from the Target environment of a deployment.

In this step, you will export the Object Store Half-Map Information and the Security Half-Map Information from the export file itself. Continue to use the FileNet Deployment Manager with the following steps:

1. In the Deployment Tree on the left side, right click on “Object Store Data” node in the “Development” environment. Invoke “Retrieve Data”.
2. In the window which opens, choose to retrieve data from “Deploy Data Set File”. Click “Next”.



3. In the next dialog page, enable the options to retrieve storage policies and storage areas from object store. Keep the other settings on default values, click “Finish”.



- Verify that when clicking on Object Store Data, you see only the “Development” Object Store exported. You can switch the tab to check the Storage Policies.

Object Store Data for Development

Label	Name	Symbolic Name	ID
Developme...	DEV	{4A75CA4E-ACCB-4B82-8466-5F1F33237D0...	

Object Stores **Storage Policies**

Object Store Data for Development

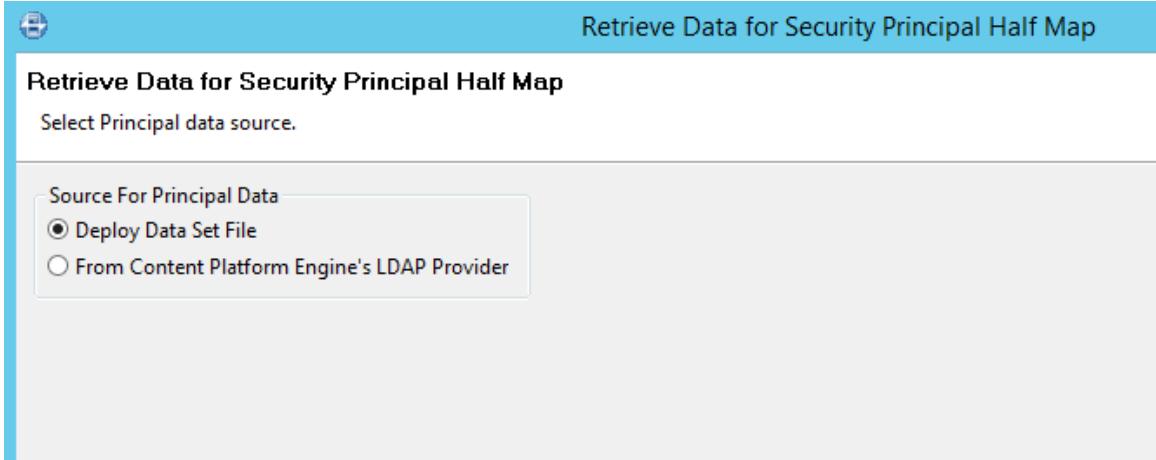
Expand All **Collapse All**

Label	Display Name	ID
Object Store	“Development” Storage Policies: 1	
	Default Database Storage Poli...	{AE0D1944-487E-471C-AB0A-1C0F85A1FBA...

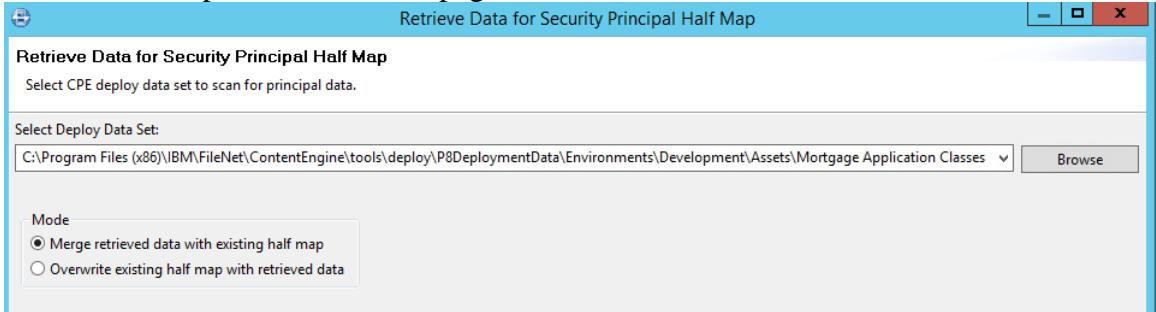
Object Stores **Storage Policies**

- Close the “Object Store Data” window.
- Right-click on “Security Principal Data” and invoke “Retrieve Data...”.

7. In the dialog which opens, select “Deploy Dataset File” for the source to extract from, click “Next”.

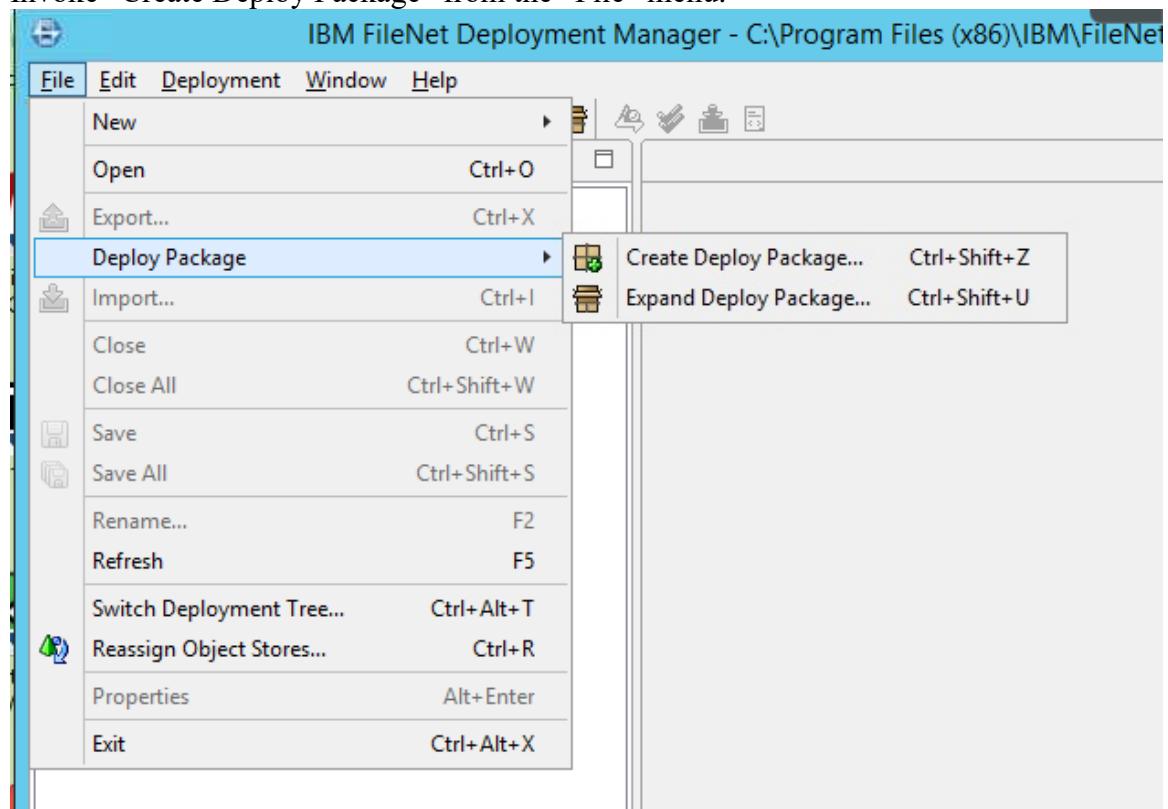


8. Leave default options on the next page, click “Finish”.

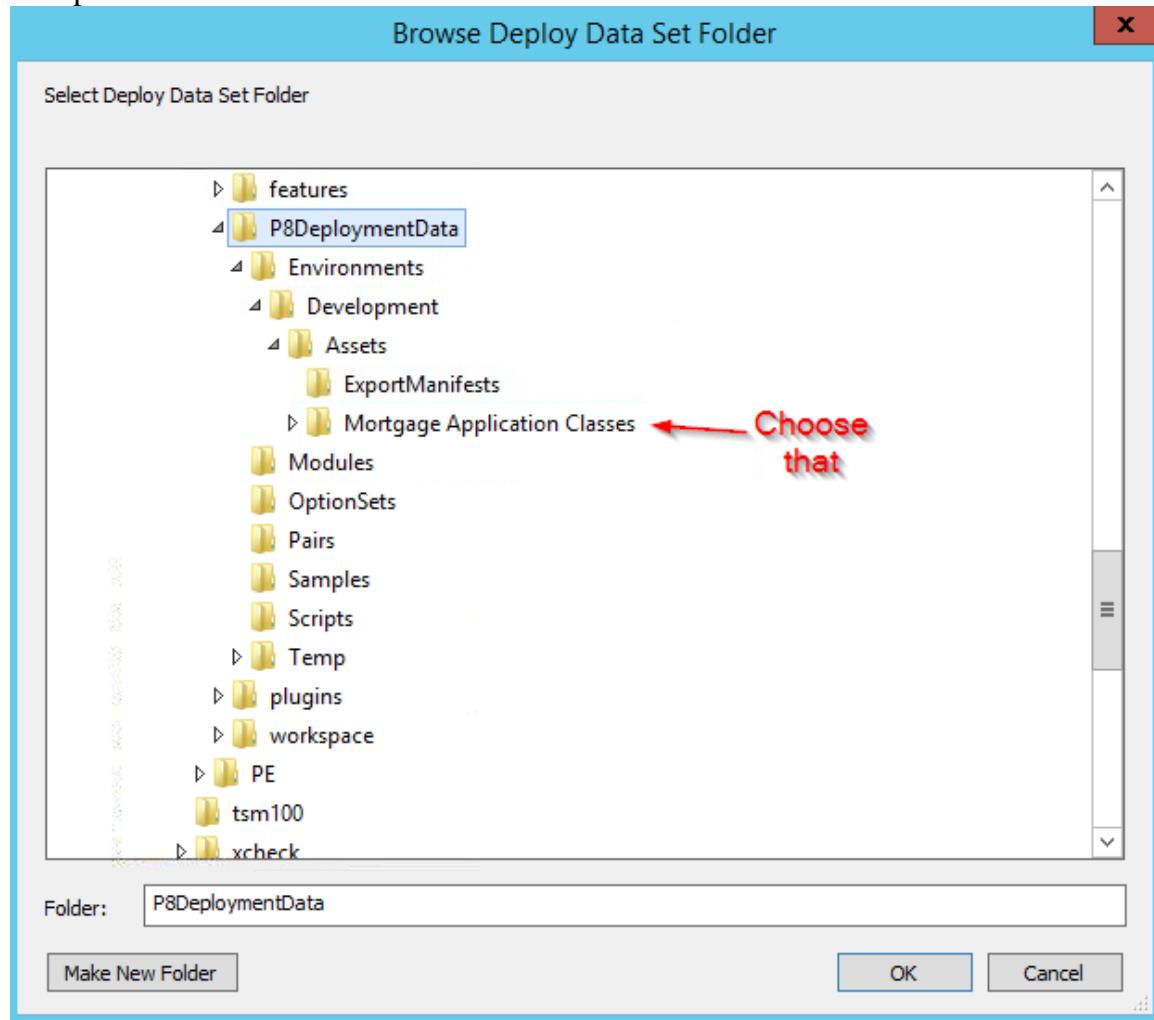


We don't need to extract Service Data or Connection Point Data, as we are exporting Class Definitions and Property Templates only.

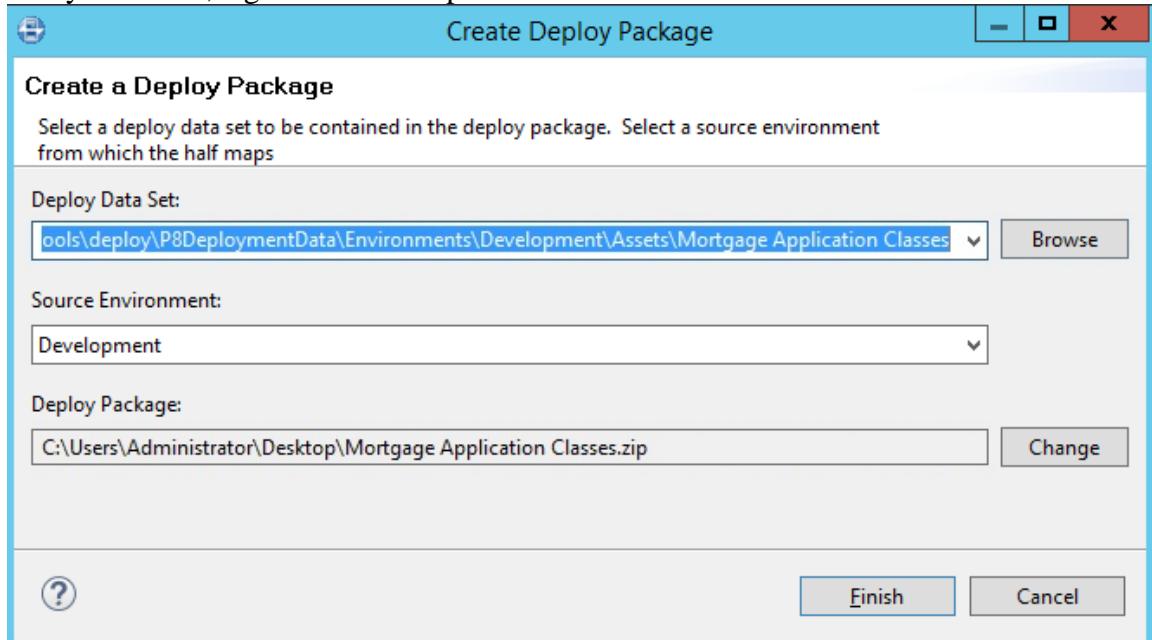
9. Invoke “Create Deploy Package” from the “File” menu.



10. In the dialog which opens, click “Browse” to select the "Deploy Data Set Folder" to export.



11. For the Deploy Package which will be created, browse to a folder which you can easily find later, e.g. on the desktop.



12. Click "Finish" to create the deploy dataset file.

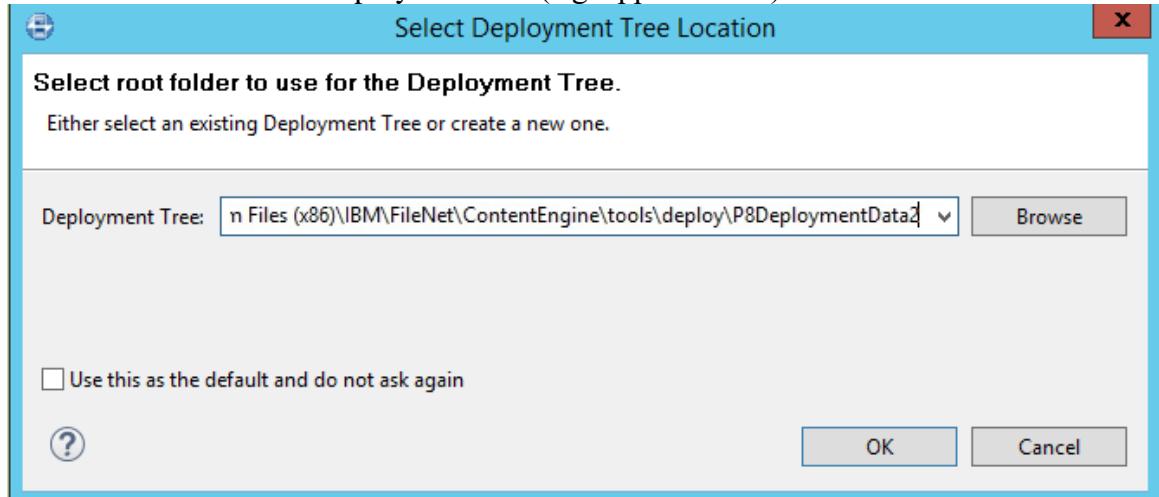
All, what is required for deploying the Classes, Properties, and maybe other Objects from a source, to a destination environment is contained in this ZIP file, nothing more is needed. If environments are distributed, it would suffice to copy only this ZIP file to the target environment. To emphasise that, and to cleanly separate exporting from importing, a new deployment manager tree is created for the rest of the exercise. Technically, this would not be required, of course.

Consequently, at this point you can close the FileNet Deployment Manager.

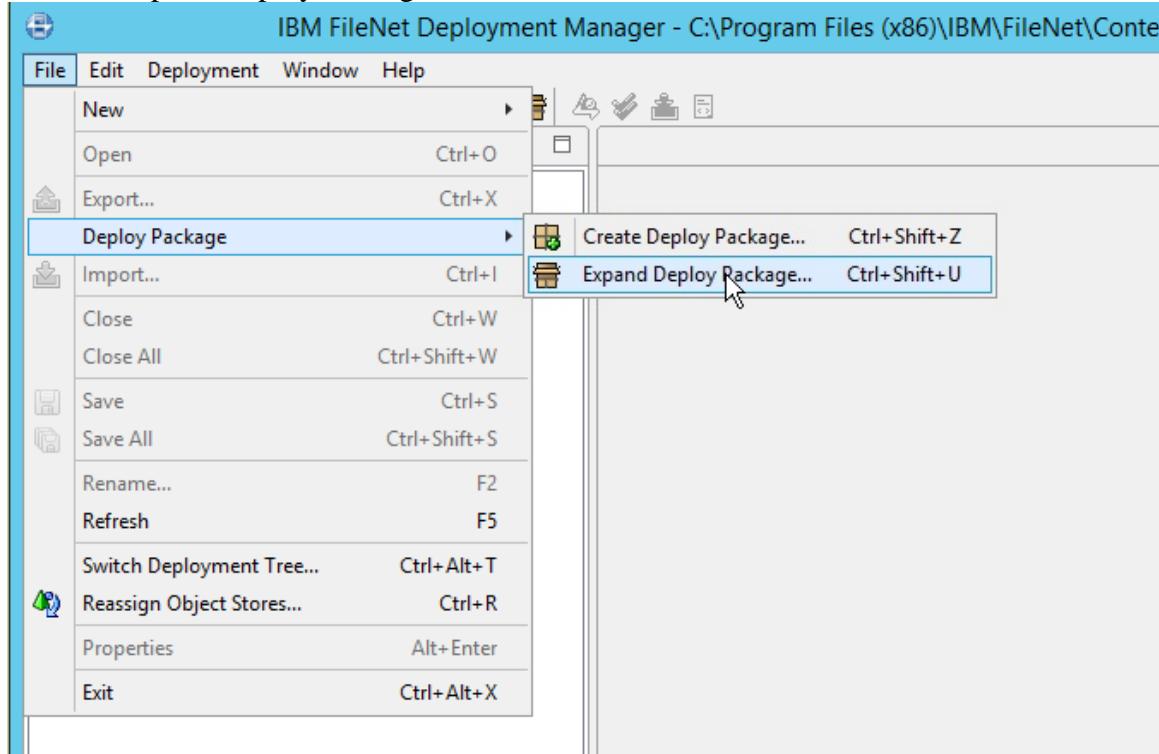
4.3.4 Define Target Environment and Target Environment Half-Maps

At this point of the exercise, first the target environment is created, and second the deploy data set from the last part is imported into it. For the Half-Maps, though, there is no data to export them from, so you have to export the required data directly from the target environment.

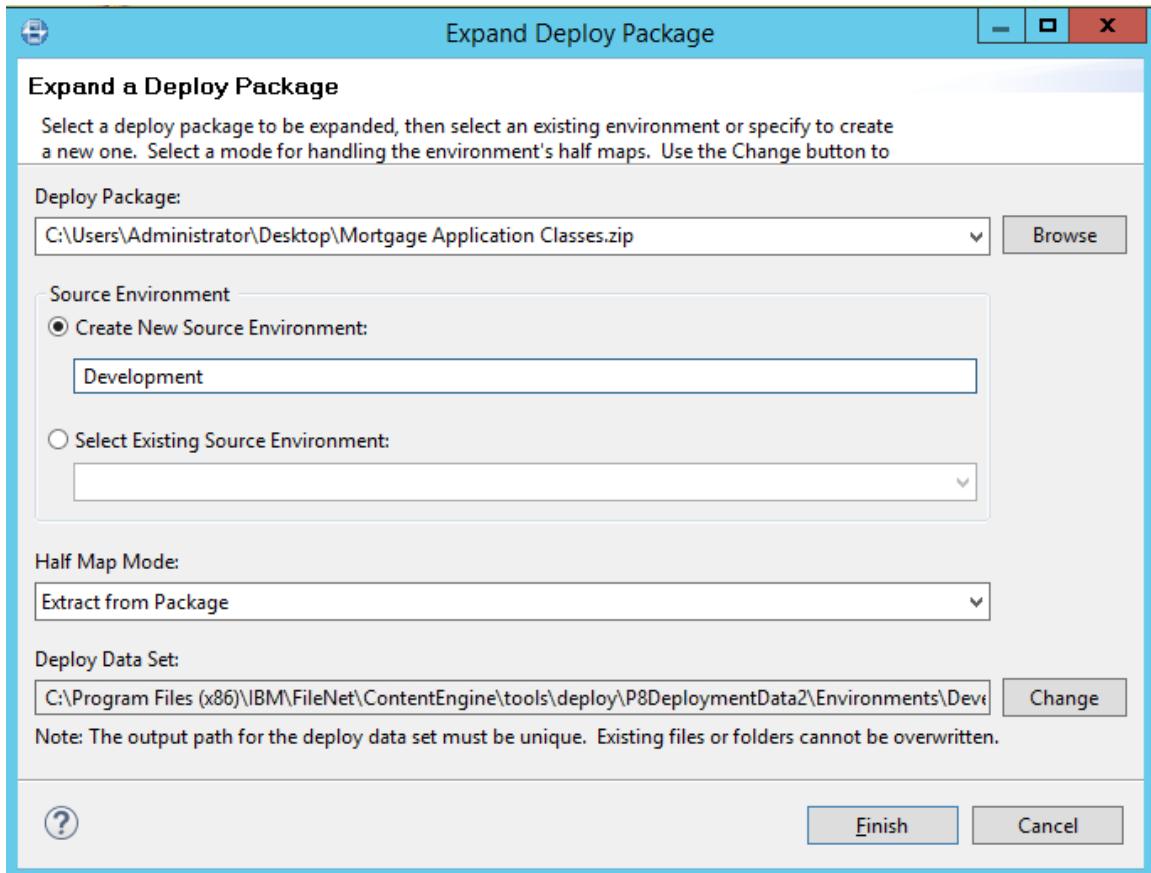
1. Start by running the FileNet Deployment Manager again. When prompted choose a different name for the Deployment tree (e.g. append a “2”):



2. Run the Expand Deploy Package from the “File” menu.

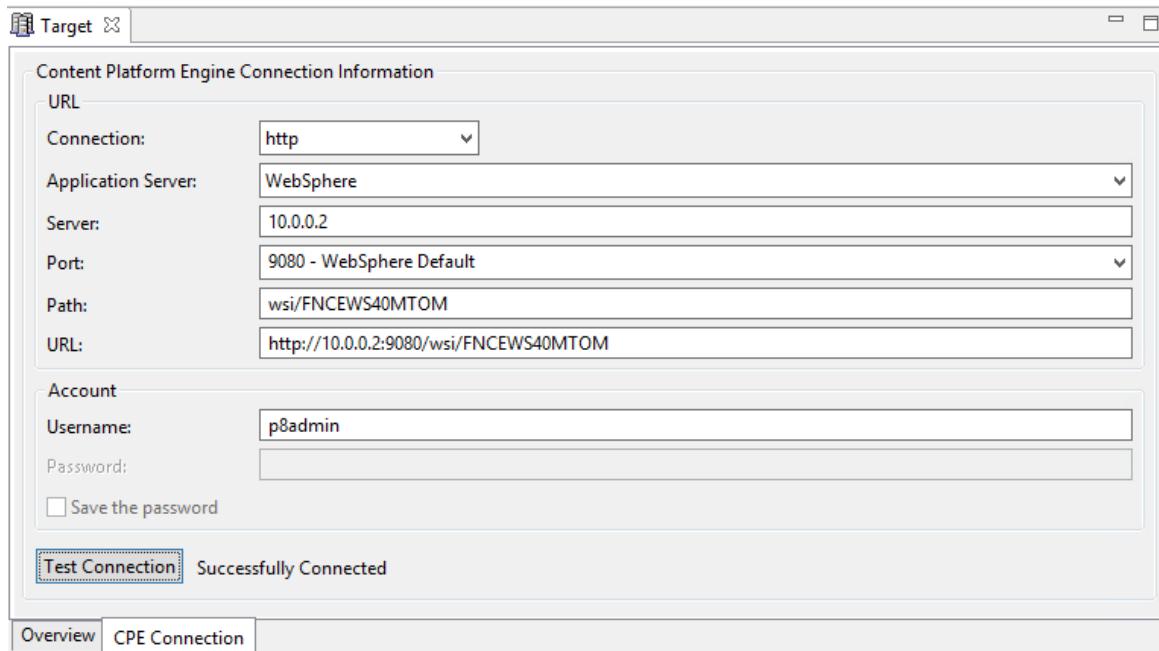


3. For the Deploy Package, browse to the file created in the first part of the exercise. Keep the defaults for the rest of the options, just provide a name for the Environment to create

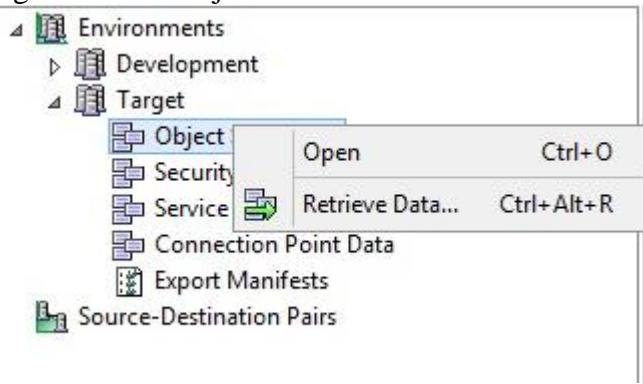


4. Click "Finish". The environment just created has no Content Platform Engine connected to it on this deployment tree. It is only a container for the Deployment Data Set File which was expanded.
5. Right-click on "Environments" and create a new environment called "Target". Double-click to open it, then supply the connection details again:
Server: vm-1.example.com
Port: 9080
Path: wsi/FNCEWS40MTOM
Username: p8admin

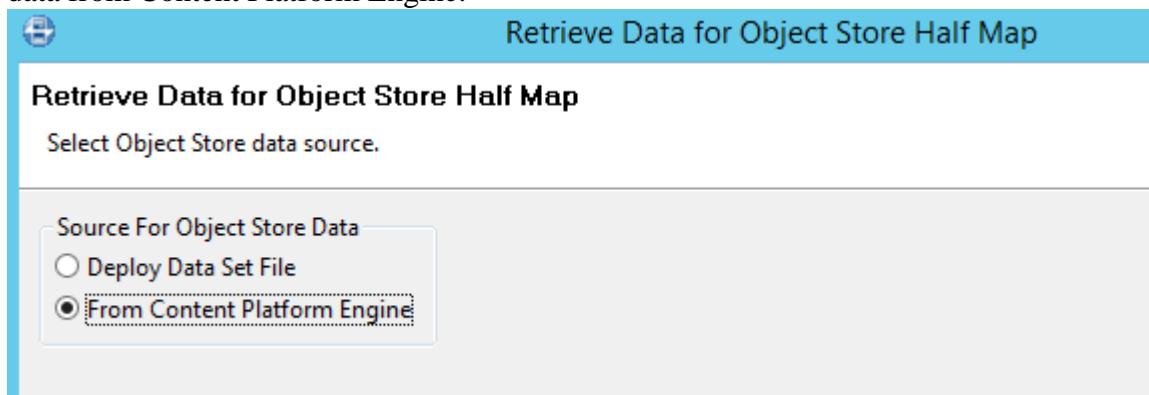
Save it, click "Test Connection" and enter the password (Think4me).



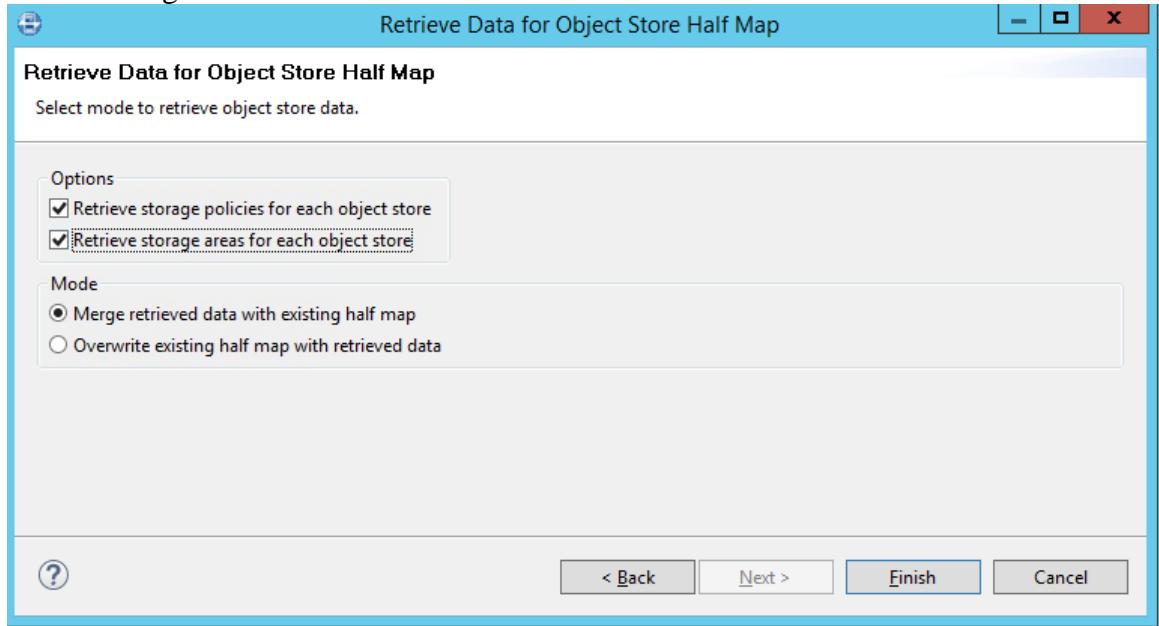
6. Close the Target Environment window.
7. On the deployment tree on the left side, expand the “Target” environment and right-click on Object Store Data. Choose “Retrieve data...”.



8. We don't have a deploy data set file to retrieve data from, so select to retrieve data from Content Platform Engine.



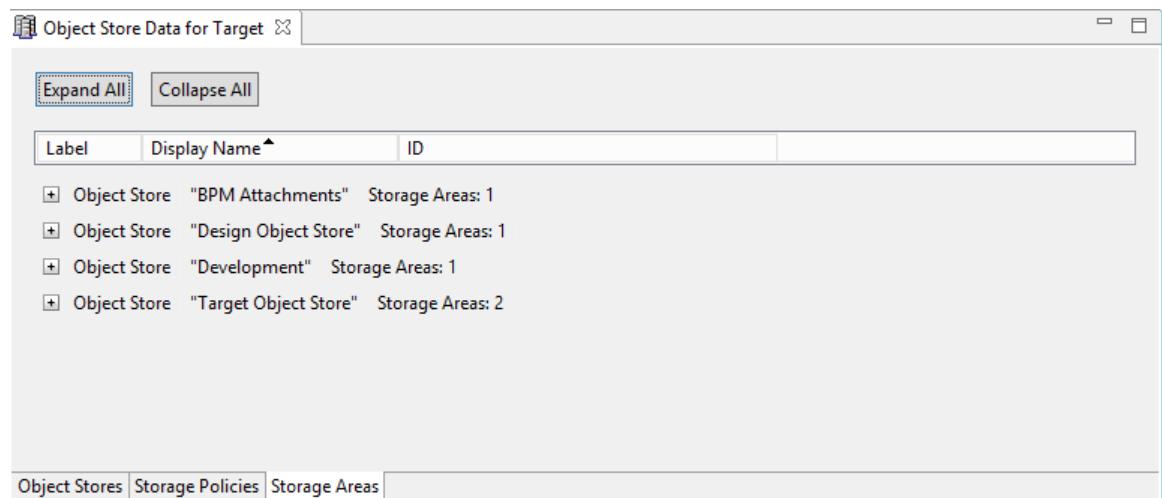
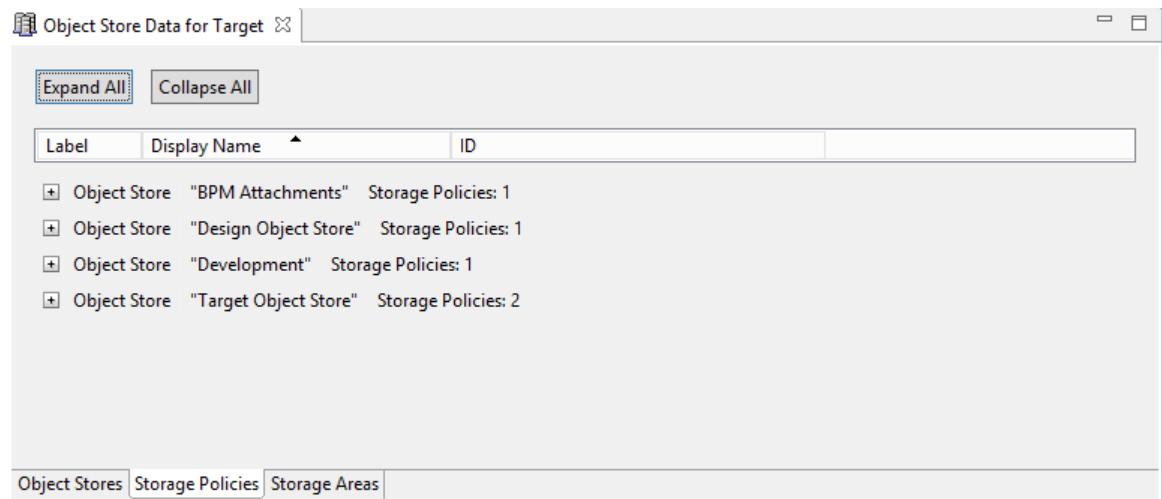
9. Enable the options to retrieve Storage Policies and Storage Areas from Content Platform Engine. Click “Finish”.



10. Check exported data again, by double-clicking on Object Store Data.

Check exported data again, by double clicking on Object Store Data.

Label	Name	Symbolic Name	ID
BPM Attachments	OS1		{577D3963-3785-4E29-9E72-9AE1BE5A3782}
Design Object Sto...	DOS		{CF2FB5DB-1E0A-4CC8-A5F9-10F7692A7ECE}
Development	DEV		{4A75CA4E-ACCB-4B82-8466-5F1F33237D0D}
Target Object Store	TOS		{B63B8DDD-A83F-45D5-84C9-259FCDEF6CE...}

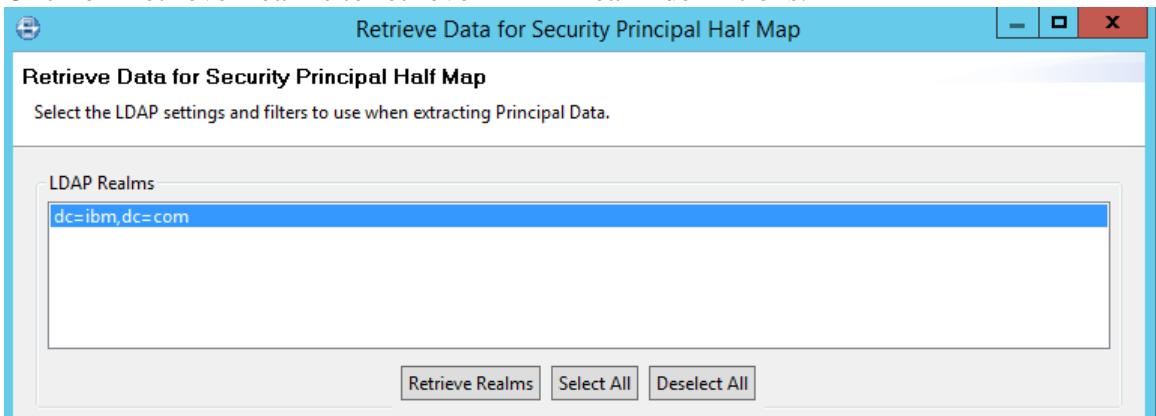


11. Close the Object Store Data again.

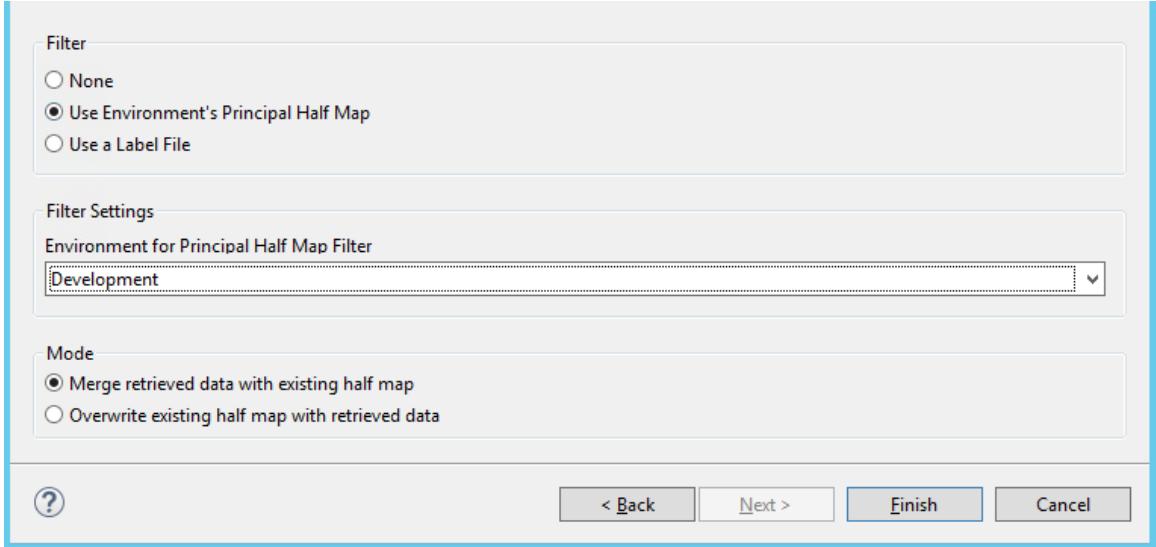
12. Right-Click on “Security Principal data” and select to retrieve data.

Select to retrieve data from Content Platform Engines LDAP provider. Click “Next”.

13. Click on Retrieve Realms to retrieve LDAP Realm definitions.



There are three options to retrieve the data required. Of course, the complete realm could be read in, but in a larger enterprise with thousands of users and groups, this probably gives more data than needed. For filtering the required data, we will use the Deployment dataset from the “Development” environment and retrieve the needed usernames from there. The tool will look up the user names required and search them in the LDAP of the target environment. This would only be needed, if the “Development” environment and the “Target” environment are not using the same LDAP.



14. Click “Finish”.

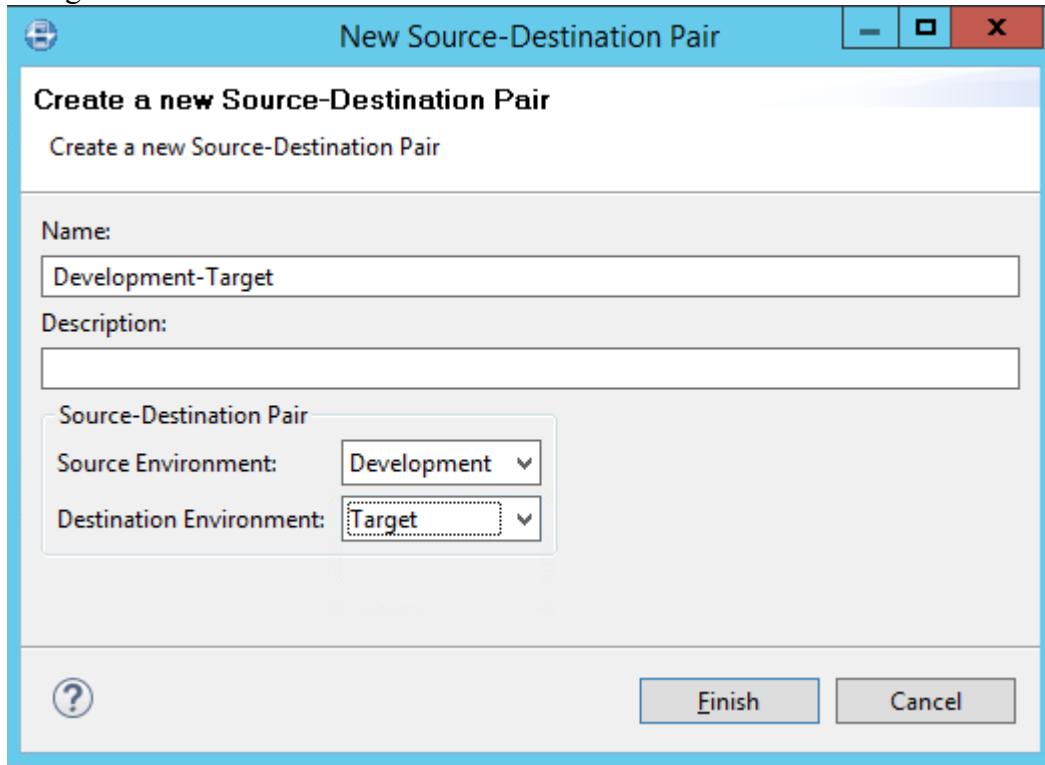
4.3.5 Define Source-Target Pair

The deployment continues by defining a Source-Target Pairing for the Development and the Target environment. By doing so, from the half-maps the mapping is automatically constructed. Then the mapping can be applied by converting the deployment data set file,

so that it suits the import environment. This part finishes by running a simulated import which will generate an Impact Analysis document for the import.

Perform the following steps:

1. Right-click the “Source-Destination Pairs” in the left-hand tree and create a new Source-Destination Pair “New > Source-Destination Pair...”. Specify a name, e.g. “Development-Target”, select the environments to pair, “Development” and “Target” and click “Finish”.



2. Expand the Source Destination pair just created and double-click on “Object Store Map”

Object Store Map for Development-Target				
	Source Name	Destination Name	Source Symbolic Name	Destination Symbolic Name
	Development	Development	DEV	DEV
				{4A75CA4E-ACCE}

3. Choose the “Target Object Store” in the Destination environment by selecting that name.

	Source Name	Destination Name
	Development	Development
	BPM Attachments	
	Design	
	Development	
	Target	

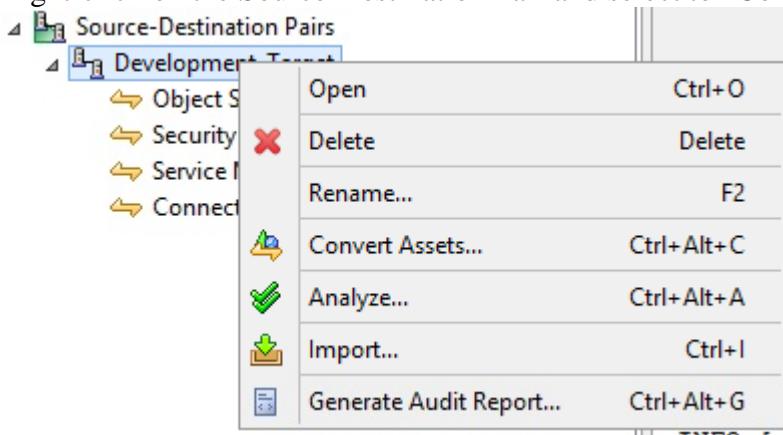
4. Choose the Storage Policies tab and choose to map the “Default Database Storage Policy” of the source environment to the “Mortgage Application Storage Policy” created on Exercise 3.

Object Store Map for Development-Target		Expand All		Collapse All	
		Source Display Name	Destination Display Name	Source ID	Destination ID
<input type="checkbox"/> Object Store "Development" mapped to "Target Object Stor... Storage Policies: 1					
	Default Database Storage Poli...	Default Database Storage Policy	{AE0D1944-487E-471C-AB0A-1C0F85A1FBA...	{665450C1-8AA	
		<input type="checkbox"/> Default Database Storage Policy <input checked="" type="checkbox"/> Mortgage Application Storage Policy			

5. Save the mapping and close the window.
6. Double-click on “Security Principal map” and observe that the mapping for three users was automatically done. Close the Window again.

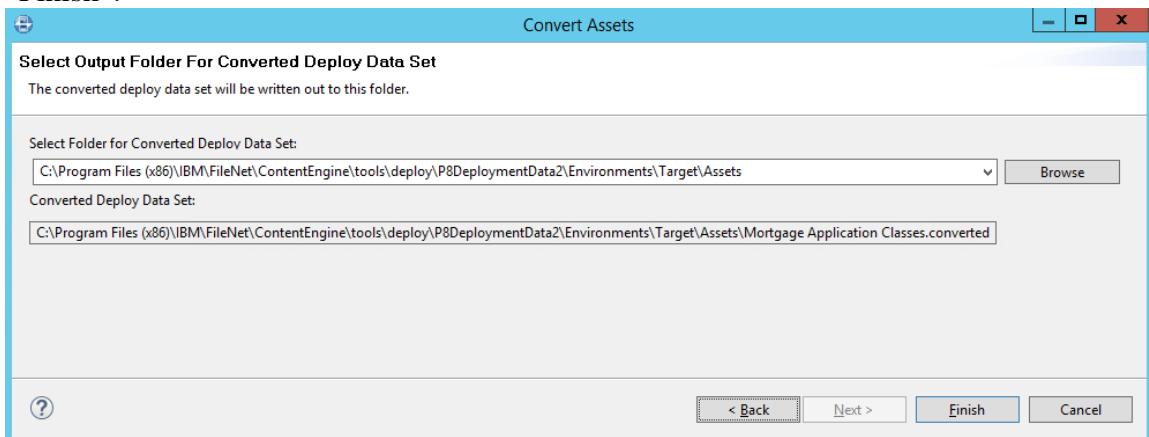
	Source Short Name	Destination Short Name	Source Display Name	Destination Display Name	Source Pri
	p8admin	p8admin	P8Admin	P8Admin	User
	p8admins	p8admins	P8Admins	P8Admins	Group
	testers	testers	testers	testers	Group

7. Right-click on the Source-Destination Pair and select to “Convert Assets...”.

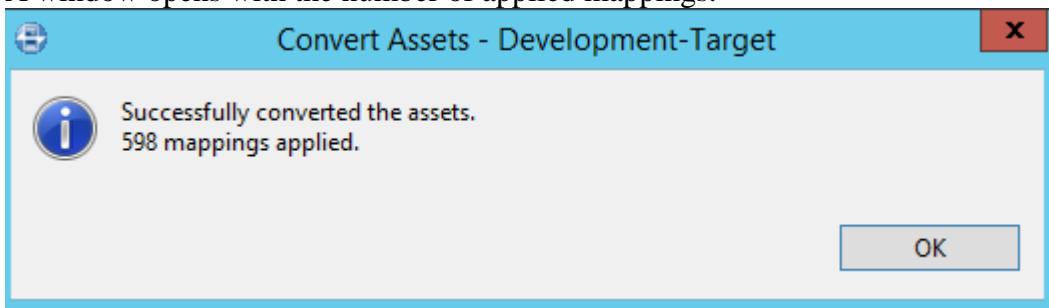


8. Choose the default value for the Deploy Data Set File to convert. Click “Next”.

9. Accept the auto-generated names for the converted Deploy Data Set file. Click “Finish”.



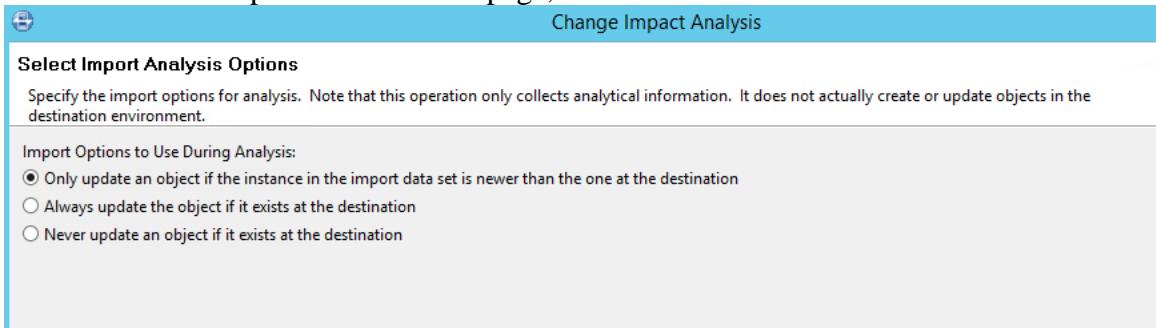
10. A window opens with the number of applied mappings.



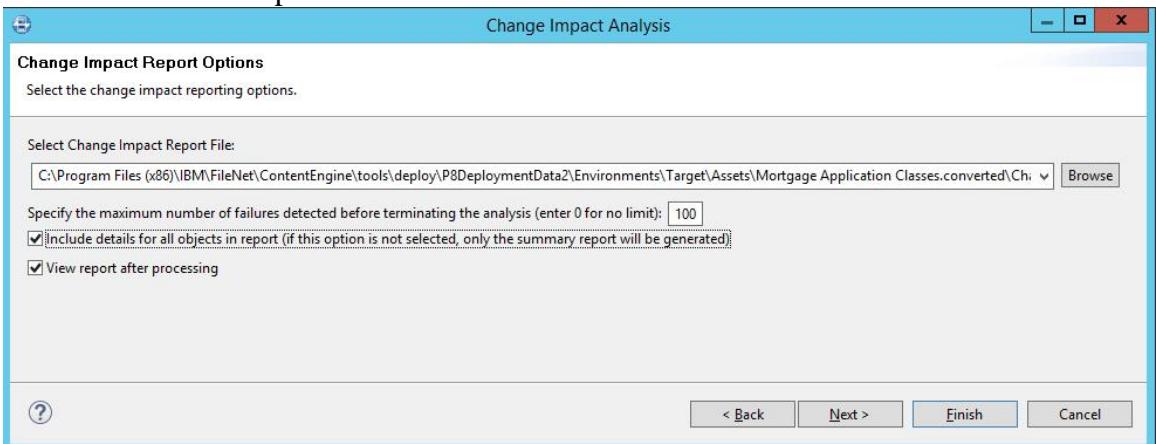
11. Right-click on the Source Destination Pair and select “Analyze”.

12. Accept the name of the converted deployment data set file and click “Next”.

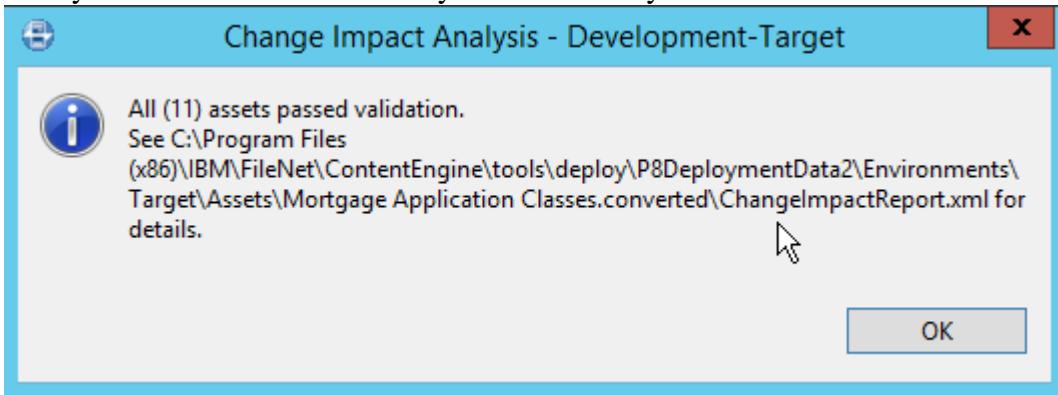
13. Leave the default options on the next page, click “Next”.



14. Enable the option to include details for all objects in the report. Accept the default values for the other options and click “Finish”.



15. Verify that all 11 assets were analyzed successfully.



16. Clicking “OK” will open the Internet Explorer with the generated report. Take your time to review the content. Then go to the bottom of the page and click the link “Passed Assets report #1”, and review it too. None of them should display any analysis errors.

4.3.6 Run the Import

When we run the Import wizard of the FileNet Deployment Manager using the default options, it will try to set some system attributes like the creation date to the same value it had on the source environment, i.e. the Development Object Store in this case. This will not work if the user used for importing is not having special advanced access rights on the object store. In this part of the exercise its first checked that this right is set for the “p8admin” user.

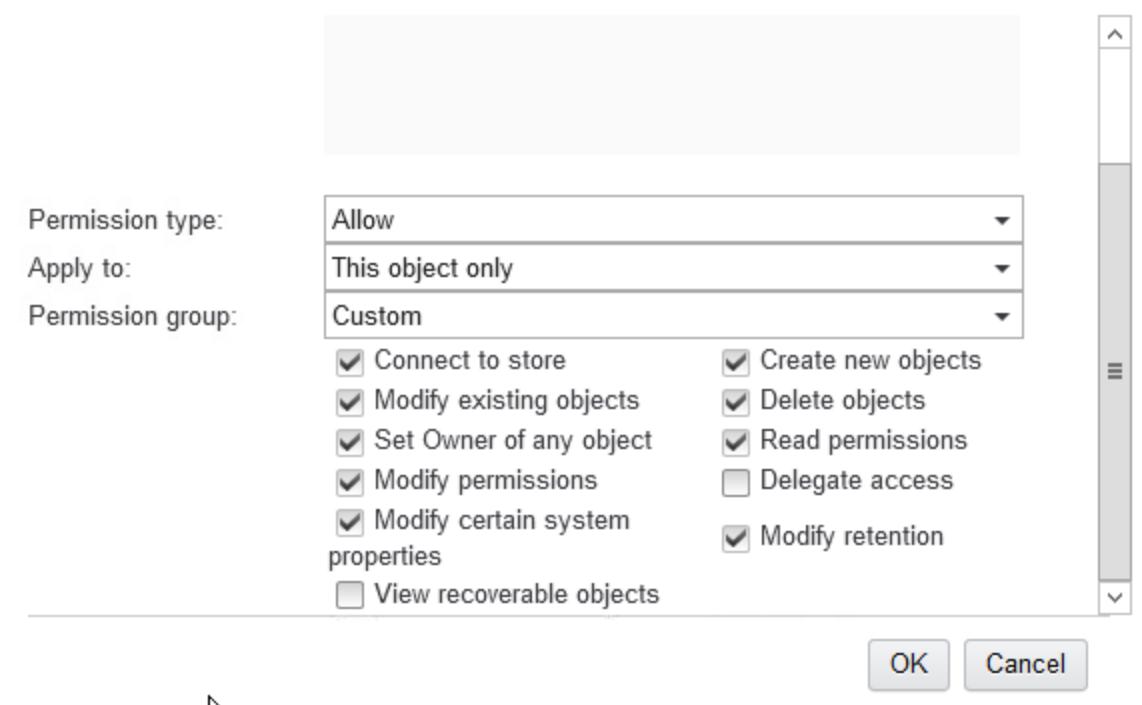
1. Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
2. In the navigation pane click on the “Target” Object Store.
3. On the right side of the window, the properties of the “Target” Object Store are shown. Choose the “Security” tab.

The screenshot shows the 'Target' Object Store properties page. The 'Security' tab is selected. A note says: 'You can allow or deny permissions to a user or group. Each permission group contains one or more access rights.' Below is a table of access permissions:

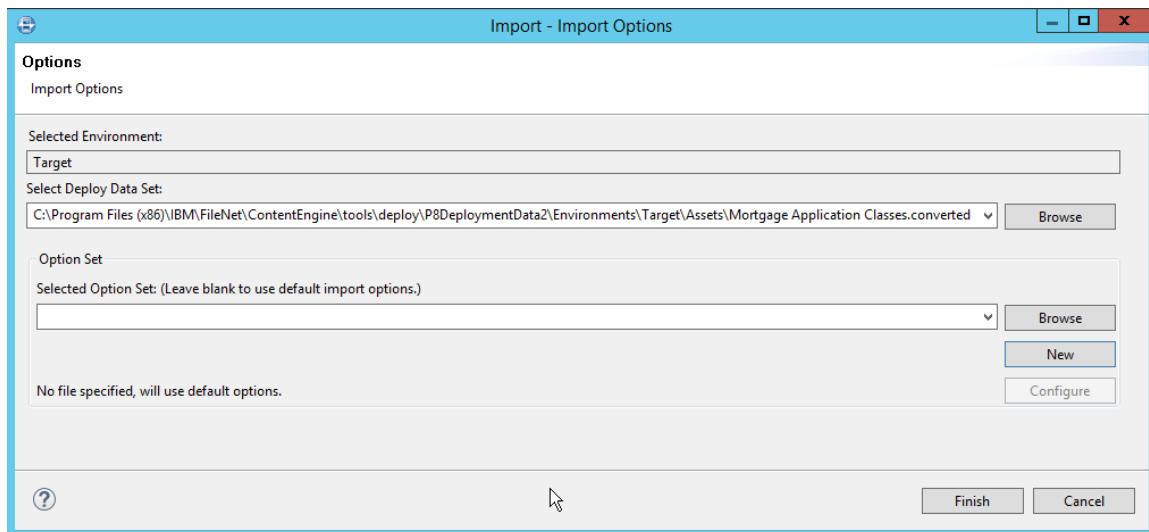
Add User/Group Permission...	Edit...	Remove	3 total	Filter
Name	Source	Permission Type		
#AUTHENTICATED-USERS	Direct	Allow		
P8Admins	Direct	Allow		
P8Admin	Direct	Allow		

4. One after the other, check the row for “P8Admins”, and “P8Admin”. Click “Edit” and perform step 5 for each of the entries.

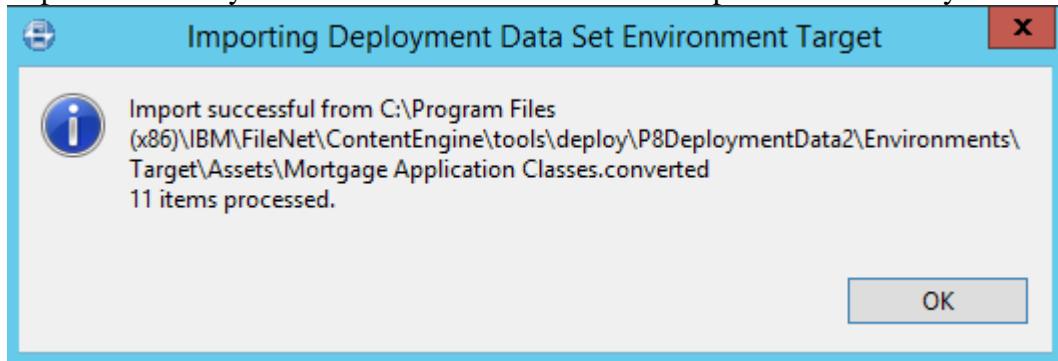
Edit Permissions



5. Scroll down to see the permissions. If “Modify certain system properties” is unchecked, check it. Click “OK”. If you modified the permissions, click “Save” at the top of the “Security” tab. This will allow to set properties such as “Date Created” on imported objects and is required for successfully using Deployment Manager.
6. Leave ACCE open for later, go back to the Filenet Deployment Manager.
7. Right-click on the Source-Destination pair, and select “Import”.
8. In this dialog, you could create a file with an option set for the import options. Read more about this in the documentation on this page
https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.com_mon.deploy.doc/deploy_mgr_command_line_importoptionssetfiles.htm.
We will use the default options, though and will not need to provide an option set. Click “Finish”.

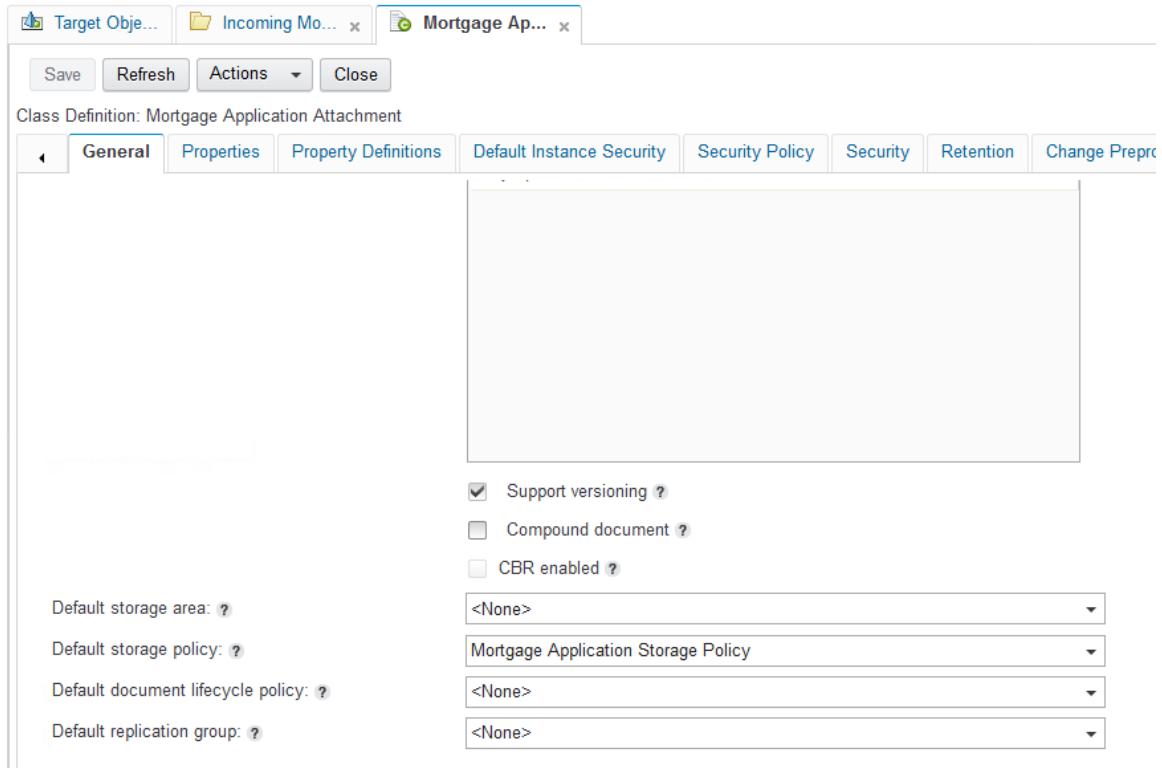


9. The import will run. After it completed a window shows the number of assets that imported correctly or failed. All 11 assets should be imported successfully.

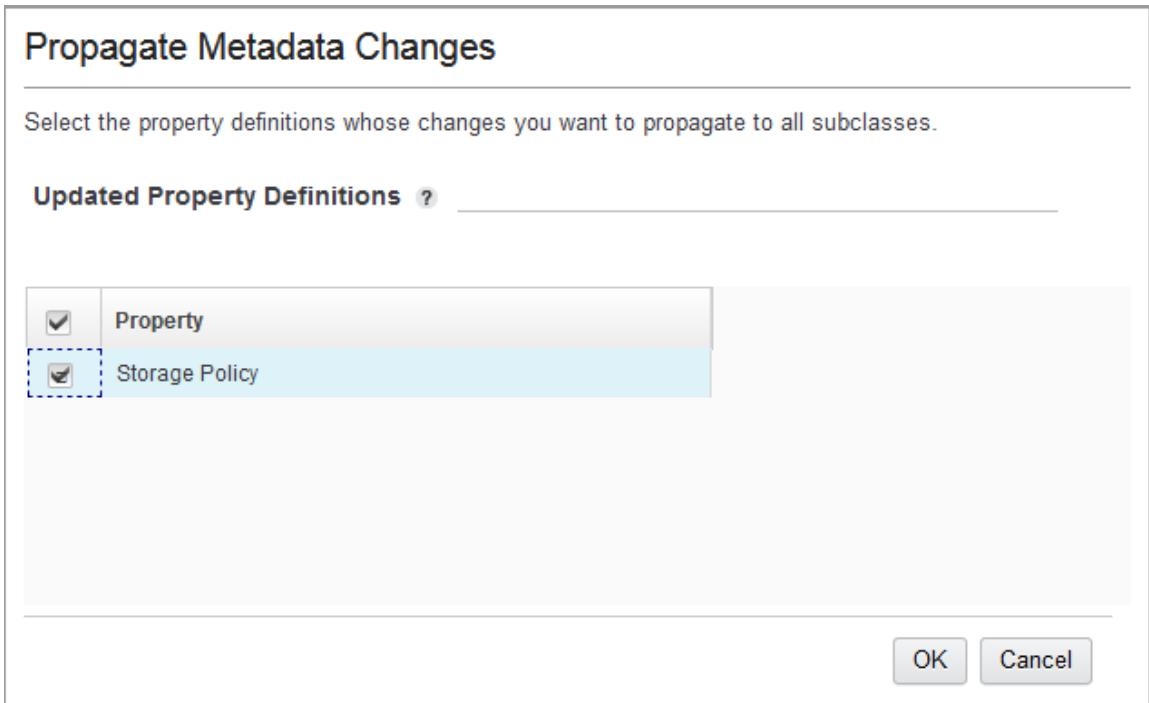


If this is unsuccessful, possible cause would be that the mapping of the Object Store data is incomplete.

10. Close the FileNet Deployment .
11. If ACCE had been closed, or the session has timed out, log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>) again. When prompted for user ID and password, use **P8Admin / Think4me**.
12. Open the “Target” Object Store. In the “Target” Object Store navigate to “Data Design > Classes > Document”. Check that “Mortgage Application Attachment” is listed.
13. Open the “Mortgage Application Attachment” class, stay on the “General” tab and scroll to the “Default Storage Policy” option. Change it to “Mortgage Application Storage Policy”.



14. Click “Save”. In the upcomming dialog, choose to propagate the change to the subclasses.



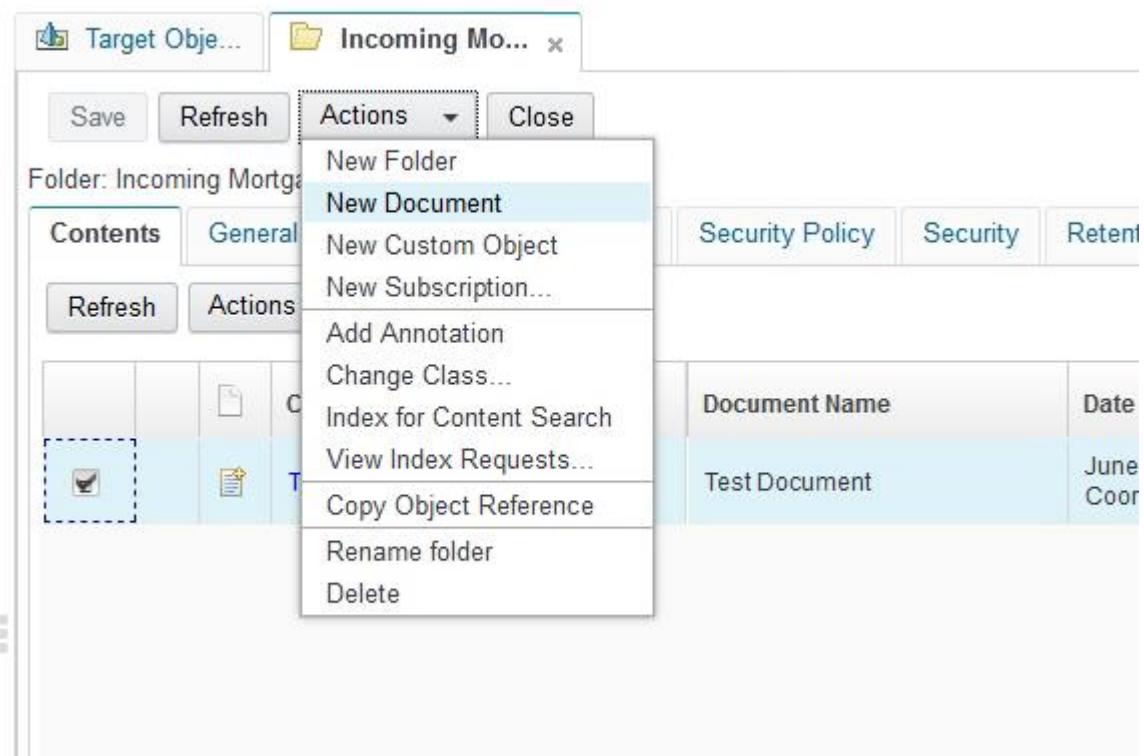
4.4 Deploy Classes – Verification Instructions

1. Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
2. Open the “Target” Object Store. In the “Target” Object Store navigate to “Data Design > Classes > Document”. Check that “Mortgage Application Attachment” is listed.
3. Double-click on “Mortgage Application Attachment” and choose the “Properties” tab in the window which opens on the right side.
4. Search to find the ID property. Check it against below table.
5. Then do the same for the two subclasses of the “Mortgage Application Attachment” class, the “Loan Application Form” and the “Payslip” class.

Class Name	Object ID	OK?
Mortgage Application Attachment	{1040DF63-0000-C61E-AA8D-11DE1F4AC453}	
Loan Application Form	{9040DF63-0000-C611-A954-7E9034A5FC2E}	
Payslip	{2041DF63-0000-CE18-9121-FC3B6C89017C}	

6. Navigate to “Browse > Root Folder” and click on “Incoming Mortgage Application Documents”.
7. In the window on the right side, the content of the folder appears.

8. Click on “Actions” and select “New Document”.



9. Choose “Loan Application Form” class and enter “Test Loan Application Form” as the title, click “Next”.

The screenshot shows a dialog box titled 'Define New Document Objects'. At the top, there are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. Below that, it says 'The values that you enter for document properties can be used to find the document later. [Learn more...](#)'. There are three input fields: 'Document title:' with the value 'Test Loan Application Form', 'Class:' with the value 'Loan Application Form', and a checked checkbox 'With content?'.

10. Choose some of the sample documents from the Desktop.

The screenshot shows a software interface for creating a new document. At the top, there are tabs: 'Target' (selected), 'Incoming Mo...', and 'New Document...'. Below the tabs are buttons: '< Back', 'Next >', 'Finish', and 'Cancel'. A section titled 'Document Content Source' with the sub-instruction 'Specify the content elements.' is present. Under 'Content Elements', there is a table with columns: Sequence, Type, File Name, URL, and MIME Type. One row is listed: Sequence is '...', Type is 'Content Transfer', File Name is 'AppSrv02.PNG', URL is '...', and MIME Type is 'image/png'. Below this is a 'Document' section with 'Document MIME type' set to 'image/png' and a checked 'Classify document' checkbox.

11. Provide the following Data:

Customer Name:	John Doe
Date of Birth:	07/10/1918
Loan Amount:	1000000
Property Address:	Park Street 5
Purchasing Price:	2000000

Click "Next".

Screenshot of the "New Document" configuration page. The top navigation bar shows "Target", "Incoming Mo...", and "New Document...". Below the navigation are buttons: < Back, Next >, Finish, and Cancel.

* Property Name	Property Value		Data Type	Cardinality	Settability
Publishing Subsidiary Folder	<input type="text"/>	<input type="button"/>	/ <Object>	0 <Single>	1 <Settable only before checkin>
Ignore Redirect	<input type="button"/> <None> (not set)	<input type="button"/>	2 <Boolean>	0 <Single>	0 <Read-write>
Entry Template Object Store Name	<input type="text"/>	<input type="button"/>	8 <String>	0 <Single>	0 <Read-write>
Entry Template Launched Workflow Number	<input type="text"/>	<input type="button"/>	8 <String>	0 <Single>	0 <Read-write>
Entry Template Id	<input type="text"/>	<input type="button"/>	5 <GUID>	0 <Single>	0 <Read-write>
Associated Case	<input type="text"/>	<input type="button"/>	7 <Object>	0 <Single>	0 <Read-write>
Extended Retention Required	<input type="button"/> <None> (not set)	<input type="button"/>	2 <Boolean>	0 <Single>	0 <Read-write>
Customer Name	<input type="text"/> John Doe	<input type="button"/>	8 <String>	0 <Single>	0 <Read-write>
Date of Birth	<input type="text"/> July 10, 1918 at 12:00:00 AM Coordinated Univers	<input type="button"/>	3 <Date>	0 <Single>	0 <Read-write>
Loan Amount	<input type="text"/> 1,000,000	<input type="button"/>	4 <Double>	0 <Single>	0 <Read-write>
Property Address	<input type="text"/> Park Street 5	<input type="button"/>	8 <String>	0 <Single>	0 <Read-write>
Purchasing Price	<input type="text"/> 200.000	<input type="button"/>	4 <Double>	0 <Single>	0 <Read-write>

12. On page “Document Content and Version”, no changes are required, click “Next”.

13. On page “Specify Setting for Retaining Object”, select indefinite retention, click “Next”.

Screenshot of the “Specify Settings for Retaining Objects” page. The top navigation bar shows “Target Obj...”, “Incoming Mo...”, and “New Document...”. Below the navigation are buttons: < Back, Next >, Finish, and Cancel.

Specify Settings for Retaining Objects

Specify the length of time that you want this object to be retained before it is deleted from the object store.

Retention date:

<input type="checkbox"/> Default retention period
<input type="radio"/> None ?
<input checked="" type="radio"/> Indefinite ?
<input type="radio"/> Expiration ?
<input type="radio"/> Permanent ?

6/15/2018 18:16:21

14. On Page “Advanced Features”, check that Storage Policy is set to “Mortgage Application Storage Policy”. Click “Next”.

15. Check the details on the Summary page and click “Finish” to create the document.

4.5 Deploy Classes – Summary

In this exercise you have:

- 1) Reviewed the Document Classes and Property Templates for storing Document Objects in a FileNet Content Platform Engine Object Store.
- 2) Deployed Document classes from one Environment to another using the FileNet Deployment Manager (FDM).

5 Exercise Configure Retention

Duration approx.: 30 minutes

5.1 *Configure Retention – Introduction*

In this exercise, retention requirements for the Mortgage Application documents will be implemented. It is assumed, that legal requirements might require that any mortgage application document submitted to the bank needs to be retained at least 1 year. If the mortgage is granted, then all the documents for requesting that granted mortgage need to be retained 5 years. Now, since that is a bit unpractical for this exercise, instead of years we will configure the retention to be 1 hour and 5 hours, instead of years.

For implementing these retention requirements, the Sweep Framework of FileNet Content Platform Engine will be used. The classes for the mortgage application will be configured in such manner, that any uploaded mortgage application document will be retained at least 1 year (hour). Then a Retention Update Sweep Policy will be defined, which will upgrade the retention to 5 years (hours) if the property “Extended Retention Required” has been set to the value true in the document. Setting of the value of this property, when a Mortgage Application was confirmed, will be done by the Workflow solution, in another sub-scenario.

You can find more about updating document objects through background processes in the documentation on this page

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.admin.tasks.doc/p8pcc175.htm.

You can find more information in the documentation on retention on this page

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.admin.tasks.doc/p8pcb010.htm.

5.2 Configure Retention – High-Level Steps

- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Target” object store
- Set the default retention for the Mortgage Application Attachment class and its subclasses to 1 hour.
- Create a Retention Update Sweep Policy for documents of the “Mortgage Application Attachment” class or one of its subclasses, which should increase the Retention to 5 hours, when the property “Extended Retention Required” has the value “true”.

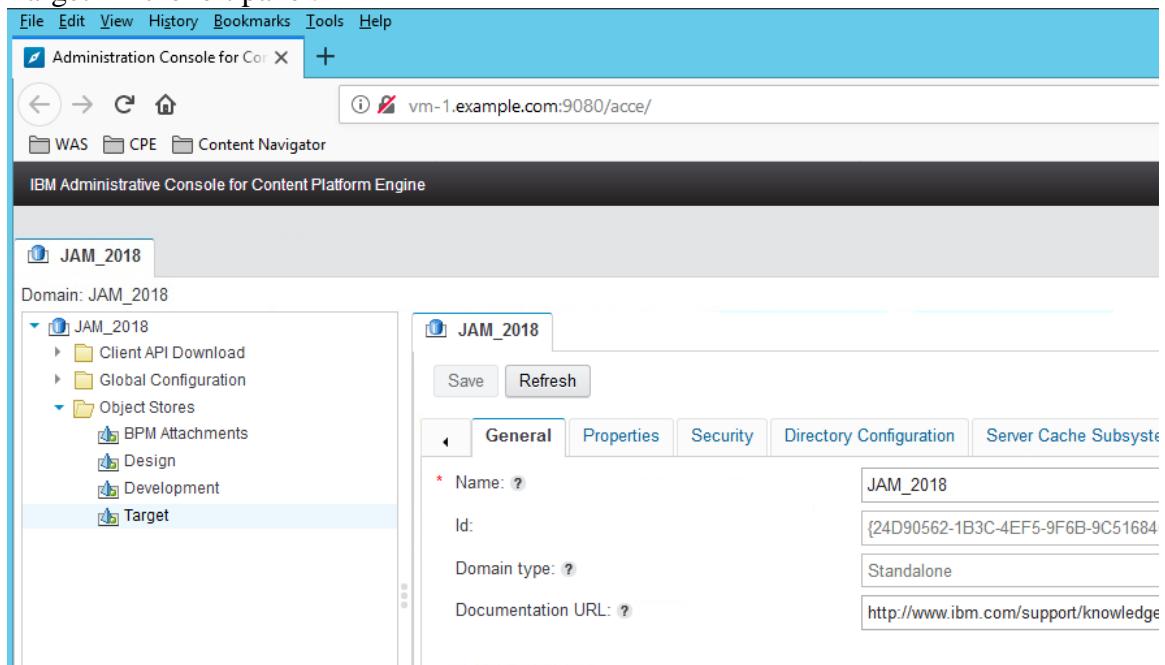
5.3 Configure Retention – Step by Step Instructions

In this exercise you will access the following tools / resources

Tool	Location / URL
Content Platform Engine Administrative Console (ACCE)	http://vm-1.example.com:9080/acce

5.3.1 Setting Default Retention

- 1) Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the object store "Target" tab by clicking "JAM_2018 > Object Stores > Target" in the left panel.



- 3) In the Navigation panel for the Object Store, navigate to “Data Design > Classes > Document”. Click the “Mortgage Application Attachment” class to edit it.

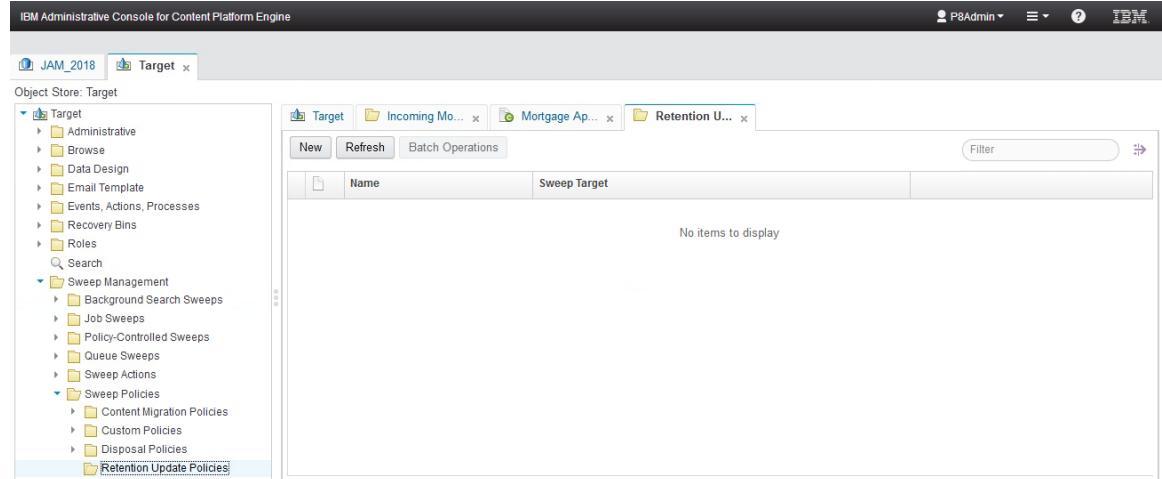
Select the “Retention” tab.



- 4) Set the Retention Period to “Period”. In the entry fields enter value “1” and select hours. Click “Save”.
- 5) Repeat the change for the subclasses of “Mortgage Application Attachment”, the “Payslip” class and the “Loan Application Form” class.

5.3.2 Configuration for Extended Retention

- 1) Still in ACCE, and still in the “Target” Object Store, please use navigation panel on left side to navigate to “Sweep Management > Sweep Policies”. Click on “Retention Update Policies”. A window opens on right side showing that currently no Retention Update Policies exist.



- 2) Click “New”. In the wizard which opens, provide the name “Extended Retention for Mortgage Application Attachments” on the first page. Set the Sweep Mode to “Normal”, and enter a check mark for “Enable retention update policy”. It is a good practice to provide descriptions too, so you are encouraged to provide one.

Display Name: Extended Retention for Mortgage Application Attachments

Sweep Mode: Normal

Enable retention update policy: Checked

Define Retention Update Policies

You can extend the period in which objects are retained and not deleted from the object store. [Learn more...](#)

* Display name: ?	Extended Retention for Mortgage Application Attachments
Existing names:	<input type="text"/>
Descriptive text: ?	This retention update policy increases the retention for Mortgage Application Attachment documents, including subclasses , if the property MA_ExtendedRetentionRequired is set to true.
* Sweep mode: ?	Normal
*	<input checked="" type="checkbox"/> Enable retention update policy ?

- 3) On the next page, set the “Target class” name to “Mortgage Application Attachment”. Provide the filter expression “MA_ExtendedRetentionRequired = true” and select to include subclasses. Leave the number of result sets to retain as 10. This will allow to review the documents, for which retention was extended, but perform cleanup of old data too.

Define Sweep Targets

Specify the criteria and rules that identify the objects that must be retained in this object store.

* Target class: ?	Mortgage Application Attachment
Filter expression: ?	MA_ExtendedRetentionRequired = true
Include subclasses: ?	<input checked="" type="checkbox"/> Enabled
* Number of sweep iterations with result records to retain: ?	10

- 4) Leave the next page unchanged (blank). This way the Sweep will continue to run until disabled.

Define Retention Update Policy Dates

Enter the dates when the retention update policy starts and ends the sweep for objects that must be retained.

Effective start date: ?

Effective end date: ?

Specific retention date: ?

- 5) On the next page, it is configured to which new value the retention should be set. It can only be increased. Choose to set it to 5 hours starting with the date it was created, as follows:

Define Retention Time

Enter the criteria for establishing when the retention date is updated for objects. The retention date is updated when the objects are assigned a class that is specified by the filter expression.

* Retention duration update: ? 5

* Retention period units: ? Hours

* Base date property name: ? DateCreated

- 6) On the last page, the settings can be reviewed. Click “Finish”.
- 7) When the Retention Update Policy was created, a window opens confirming this. Click “Open” to immediately open the newly created Retention Update Policy.

Success

Start time: June 16, 2018 at 3:29:19 PM Coordinated Universal Time

End time: June 16, 2018 at 3:29:21 PM Coordinated Universal Time

Elapsed time: 2 seconds

100%

Created "Extended Retention for Mortgage Application Attachments"

- 8) Review the properties of the Retention Update Policy. Properties might indicate, that it already ran once over the documents.

Retention Update Policy: Extended Retention for Mortgage Applic...

General	Properties	Security	Sweep Results
Policy controlled sweep: ?	Document		
Filter expression: ?	MA_ExtendedRetentionRequired = true		
* Sweep mode: ?	Normal		
Option:	<input checked="" type="checkbox"/> Include subclasses ?		
Effective start date: ?			
Effective end date: ?			
* Number of sweep iterations with result records to retain: ?	10		
Completed iterations: ?	0		
Examined object count: ?	0		
Processed object count: ?	0		
Failed object count: ?	0		

5.4 Configure Retention – Verification Instructions

- Still in ACCE, with the “Target” Object Store open, use the navigation panel on the left side to navigate to “Browse > Root Folder”. Click on “Incoming Mortgage Application Documents”. A window opens on the right side containing the documents of that folder. It should show the “Test Loan Application Form” which was created in section 4.4 on page 80.

Containment Name	Document Name	Date Created	Created By	Class	Major Version Number	Minor Version Number	Status
Test Document	Test Document	June 14, 2019 at 12:55:12 PM Coordinated Universal Time	PAdmin	Document	1	0	1 (Released)
Test Loan Application Form	Test Loan Application Form	June 15, 2018 at 6:19:27 PM Coordinated Universal Time	PAdmin	Loan Application Form	1	0	1 (Released)

- Click on “Test Loan Application Form”, and verify the “Retention” tab. It should display retention is “Indefinite”, which means, it will be retained, but its not specified yet how long.

General	Properties	Versions	Content Elements	Folders Filed In	Annotations	Security Policy	Security	Retention	Lifecycle P...
<p>Retention:</p> <p><input type="radio"/> None ?</p> <p><input checked="" type="radio"/> Indefinite ?</p> <p><input type="radio"/> Expiration ?</p> <p><input type="radio"/> Permanent ?</p> <p>6/16/2018 15:41:58</p>									

- Select the “Properties” tab and search the property displayed as “Extended Retention Required”. Using the horizontal scroll bar, scroll to the right until you see the symbolic name of it is “MA_ExtendedRetentionRequired”.

Document: Test Loan Application Form, Version: 1.0, Status: Released

Property Name	Is a Value	Hidden	Symbolic Name
Entry Template Launched Workflow Number	True		EntryTemplateLaunchedWorkflowNum
Entry Template Id	False	True	EntryTemplateId
Associated Case	False	True	CmAcMAssociatedCase
Extended Retention Required	False	False	MA_ExtendedRetentionRequired
Customer Name	False	False	MA_CustomerName
Date of Birth	False	False	MA_MADate
Loan Amount	False	False	MA_LoanAmount

- 4) Select the value “True” for it and click “Save”.
- 5) The sweep subsystem has a Sweep Activity Delay configured for it. This means that the sweep policy will not immediately update the retention. Wait approx. 2 minutes, you might also continue with the other exercises and get back to this at a later time. If you decide to wait, you can get back to the Retention Update Policy window and refresh it from time to time. When it runs, it should increase the counters on the “General” tab.

Completed iterations: ?

Examined object count: ?

Processed object count: ?

Failed object count: ?

- 6) When the counters increased, get back to the “Test Loan Application” document properties window and click “Refresh”. Check the “Retention” tab.

Document: Test Loan Application 2, Version: 1.0, Status: Released

Retention:	<input type="radio"/> None ?	<input type="radio"/> Indefinite ?	<input checked="" type="radio"/> Expiration ?	6/16/2018	20:51:51
			<input type="radio"/> Permanent ?		

5.5 Configure Retention – Summary

In this exercise you have:

- 1) Configured the default retention for the document classes created earlier.
- 2) Defined a Retention Update Policy for defining the retention based on the metadata of the documents.

6 Exercise: Dynamic Filing of Payslips

Duration approx.: 30 minutes

6.1 *Dynamic Filing of Payslips – Introduction*

In one of the exercises of the Workflow sub-scenario the Business Automation Workflow (BAW) solution will be configured in such a way, that when a document of type “Mortgage Application Form” is created in the repository, a new Case will be started. At some point when the case is processed, the customer will be asked to additionally file one or more copies of their Payslips, for checking if the mortgage can be granted or not.

Thus, when the Payslip document(s) are filed in Content Platform Engine. It is intended that this “notifies” the matching case, so that the case can continue. For this, the case capability of BAW needs the document to be filed within the case folder created by the case capability for processing that case. This folder name, however, is unknown to Datacap. So, some additional logic is required to file the Payslip in the right place. As one customer might be having several running Mortgage Application Cases, the Payslip might even need to be filed in more than one case folder.

Within FileNet Content Platform Engine, this can be achieved for example by using an Event Subscription. This means, FileNet Content Platform Engine will be configured to run a small piece of JavaScript code, whenever a document for the Payslip document class is created in the Data Store. That JavaScript code looks up the Customer name in the Payslip documents properties, searches the matching Case Manager Folder(s) and files the document in all matching folders, where the case has not been completed or cancelled.

For more details on events and subscriptions, refer the Content Platform Engine documentation

https://www.ibm.com/support/knowledgecenter/en/SSNW2F_5.5.0/com.ibm.p8.sysoverview.doc/p8sov006.htm

The Event Subscription created in this exercise cannot be tested as part of the ECM sub-scenario, as it can only be executed successfully, if a case folder for a customer exists. The case folder will not exist until the BAW solution gets deployed as part of the Workflow sub-scenario, and a case has been created for processing a Mortgage Application Form of a user. Therefore, either working on this exercise could be delayed until the Workflow sub-scenario is complete or just the testing part should be postponed. When doing it at an earlier stage, it can only be verified, that we get the expected error message, which explains that there is no subclass of the Case Folder class with a definition of the “Customer Name” property.

6.2 Dynamic Filing of Payslips – High-Level Steps

- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Target” object store
- Create a new Event Action of type Javascript, and provide the javascript from file “File Payslip Event Action.js” from folder “C:\Exercise6” as its code.
- Create a new Subscription for the “Payslip” class, which should execute this event action asynchronously, when documents of class “Payslip” are checked in.

In this exercise you will access the following tools / resources

Tool	Location / URL
Content Platform Engine Administrative Console (ACCE)	http://vm-1.example.com:9080/acce

6.3 Dynamic Filing of Payslips – Step by Step Instructions

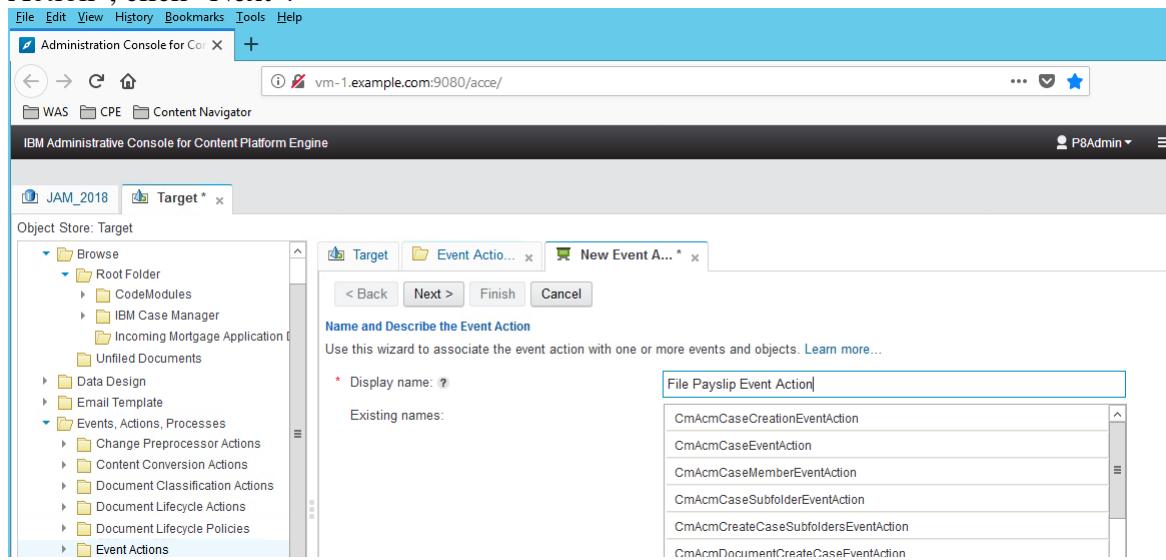
To get started with this exercise, execute the following steps:

- 1) Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the object store "Target" tab by clicking "JAM_2018 > Object Stores > Target" in the left panel.

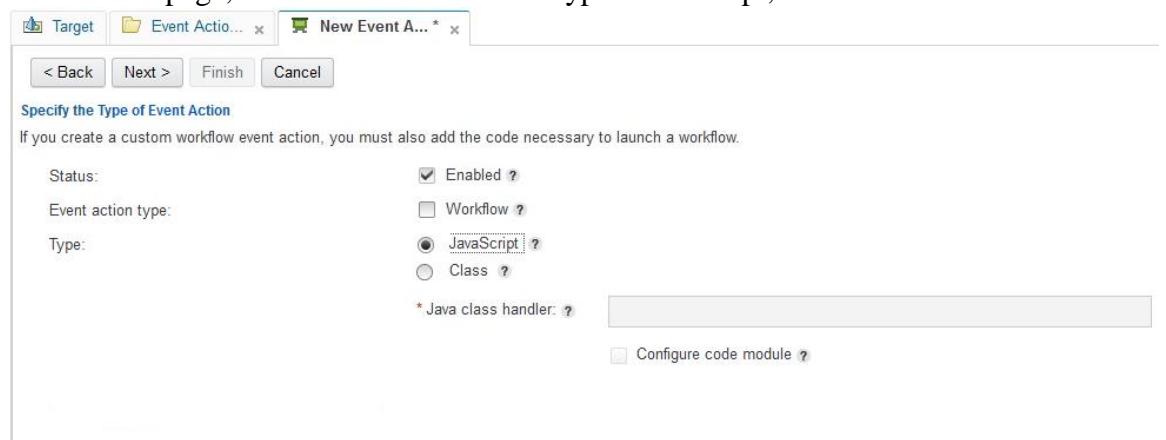
- 3) With the open tab for the Object Store “Target”, in the navigation panel on left side unfold “Events, Actions, Processes”, and click “Event Actions”.

Display Name	Is Enabled	Description	Prog ID	Creator	Date Created
CmAcnCaseCreationEventAction	True	com.ibm.casemgmt.intgimpl.eventhandler.P8CaseCreationEventHandler	P8Admin	PM Coordinating Universal Tin	June 19, 201
CmAcnCaseEventAction	True	com.ibm.casemgmt.intgimpl.eventhandler.CaseEventHandler	P8Admin	PM Coordinating Universal Tin	June 19, 201
CmAcnCaseMemberEventAction	True	com.ibm.casemgmt.intgimpl.eventhandler.CaseMemberEventHandler	P8Admin	PM Coordinating Universal Tin	June 19, 201
CmAcnCaseSubfolderEventAction	True	com.ibm.casemgmt.intgimpl.eventhandler.CaseSubfolderEventHandler	P8Admin	PM Coordinating Universal Tin	June 19, 201
CmAcnCreateCaseSubfoldersEven	True	com.ibm.casemgmt.intgimpl.eventhandler.CaseSubfoldersEventHandler	P8Admin	PM Coordinating Universal Tin	June 19, 201

- 4) Click “New”, to create a new “Event Action”. Name it “File Payslip Event Action”, click “Next”.



- 5) On the next page, choose “Event action of type” JavaScript, click “Next”.



- 6) Open Windows Explorer and locate the directory “C:\Exercise6”. Open the file “File Payslip Event Action.js” with Notepad++ and copy the content of that file to the clipboard.

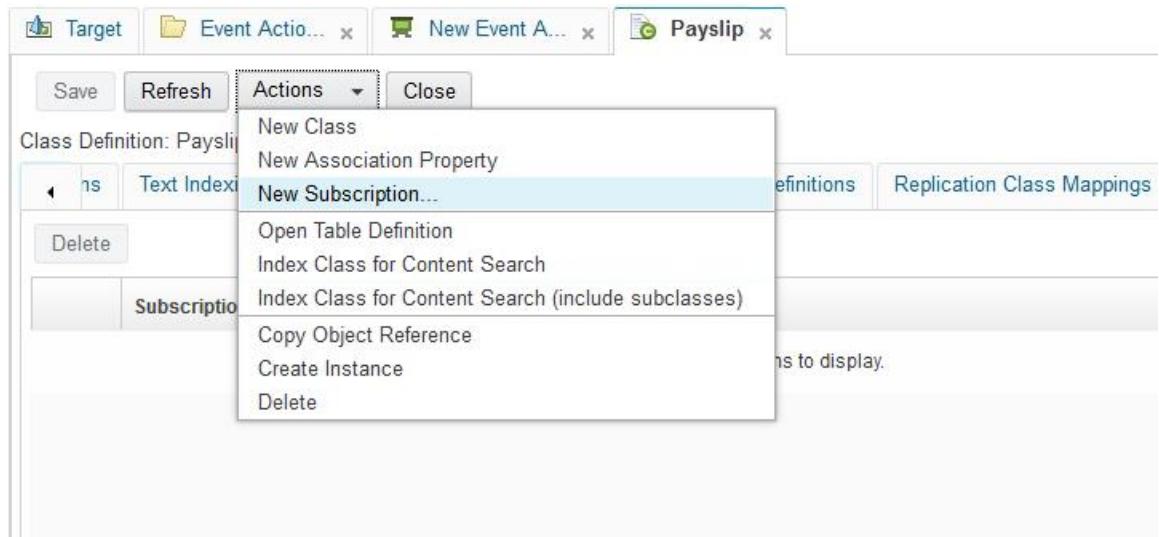
Then get back to the ACCE. Remove everything from the “Event Action Script” text box, and then paste the content of the file “File Payslip Event Action.js” into the text field. Click “Next”, then “Finish” on the Summary page. With the Event

Action created, click “Close”.

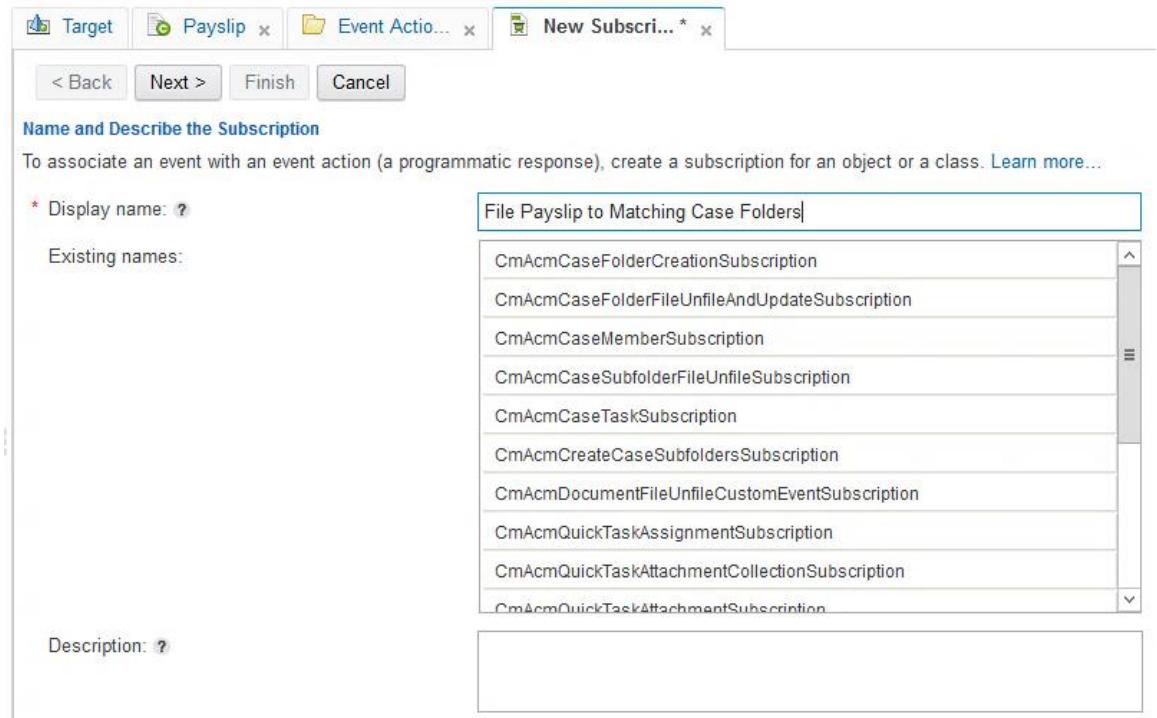
```
importPackage(java.io);
importClass(java.lang.System);
importClass(java.lang.Integer);
importClass(Packages.com.filenet.api.engine.EventHandler);
importClass(Packages.com.filenet.api.util.Id);
importPackage(Packages.com.filenet.api.events);
importPackage(Packages.com.filenet.api.property);
importPackage(Packages.com.filenet.api.exception);
importPackage(Packages.com.filenet.api.core);
importPackage(Packages.com.filenet.api.constants);
importClass(Packages.com.filenet.api.query.SearchSQL);
```

- 7) Next navigate to the Payslip Document class, you find it by selecting “Data Design > Classes > Document > Mortgage Application Attachment” and clicking on the “Payslip” document class. With the class properties window open on the right side, choose the “Subscriptions” tab.

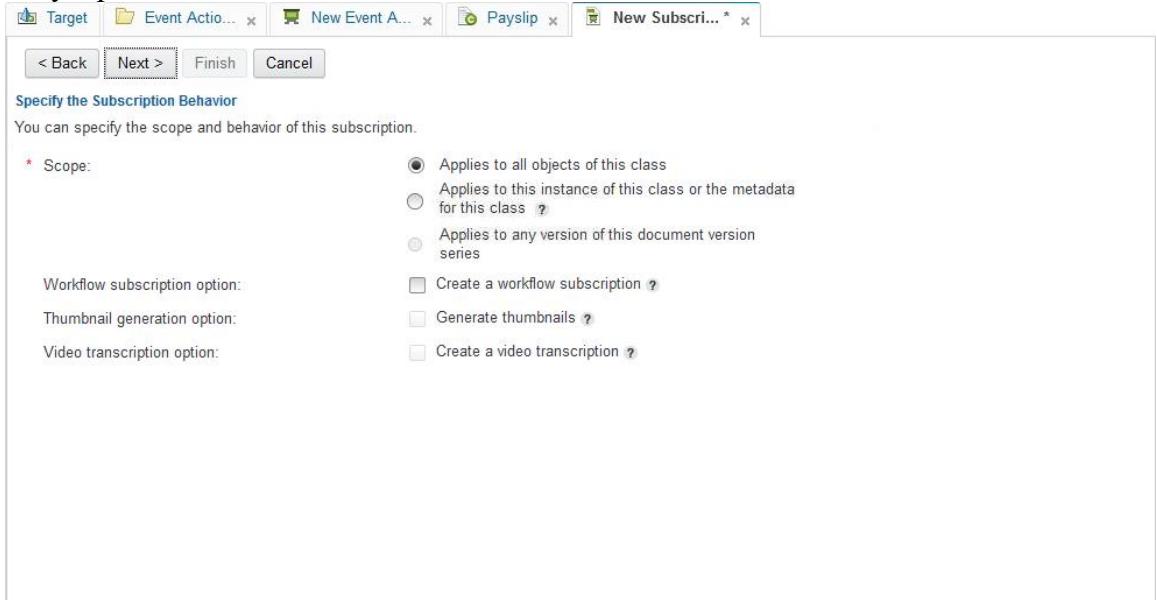
- 8) From the Actions drop down menu of the class, choose the “New Subscription” menu entry.



- 9) In the New Subscription dialog, provide the name “File Payslip to Matching Case Folders”, and click “Next”.



- 10) On the next page, choose to apply the subscription to all object of the class “Payslip”, click “Next”:



- 11) On the next page, check to subscribe on the “Checkin Event”. This usually has better results than subscriptions on the “Creation Event”, the checkin occurs later

and the properties have already been stored when it fires. Click “Next”.

The screenshot shows the 'Select the Triggers' dialog. At the top, there are tabs: Target, Test, and New Subscri... * (which is active). Below the tabs are buttons: < Back, Next >, Finish, and Cancel. The main area is titled 'Select the Triggers' with the sub-instruction: 'Select the system or custom events that will trigger the actions that are defined in the associated event action script or COM object.' A list titled 'Triggers:' contains a table:

<input type="checkbox"/>	Event Name
<input type="checkbox"/>	Cancel Checkout Event
<input type="checkbox"/>	Case File Event
<input type="checkbox"/>	Case Related Event
<input type="checkbox"/>	Case Unfile Event
<input type="checkbox"/>	Change Class Event
<input type="checkbox"/>	Change State Event
<input checked="" type="checkbox"/>	Checkin Event
<input type="checkbox"/>	Checkout Event
<input type="checkbox"/>	Classify Complete Event

- 12) On the next page of the dialog, choose the “File Payslip Event Action” which was created earlier. Notice the Event Action could also have been created directly from here.

The screenshot shows the 'Select an Event Action' dialog. At the top, there are tabs: Target, Event Actio..., New Event A..., Payslip (which is active), and New Subscri... *. Below the tabs are buttons: < Back, Next >, Finish, and Cancel. The main area is titled 'Select an Event Action' with the sub-instruction: 'Select the event action that defines the actions to be taken when the subscription is triggered.' A dropdown menu is open, showing the option 'File Payslip Event Action'.

- 13) On the last page, additional options can be specified. Leave the default enabled, which is to Enable the subscription, and to not run it synchronously. A synchronous event subscription will be executed together with checkin of the Payslip document and will prevent successful checkin of the Payslip if it fails.

Click “Next” to get to the summary page, then click “Finish”:

The screenshot shows a software interface with a top navigation bar containing tabs: Target, Event Action..., New Event A..., Payslip, and New Subscri...*. Below the tabs is a row of buttons: < Back, Next >, Finish, and Cancel. The 'Next >' button is highlighted with a dashed border. The main content area is titled "Specify Additional Options" and includes the following configuration options:

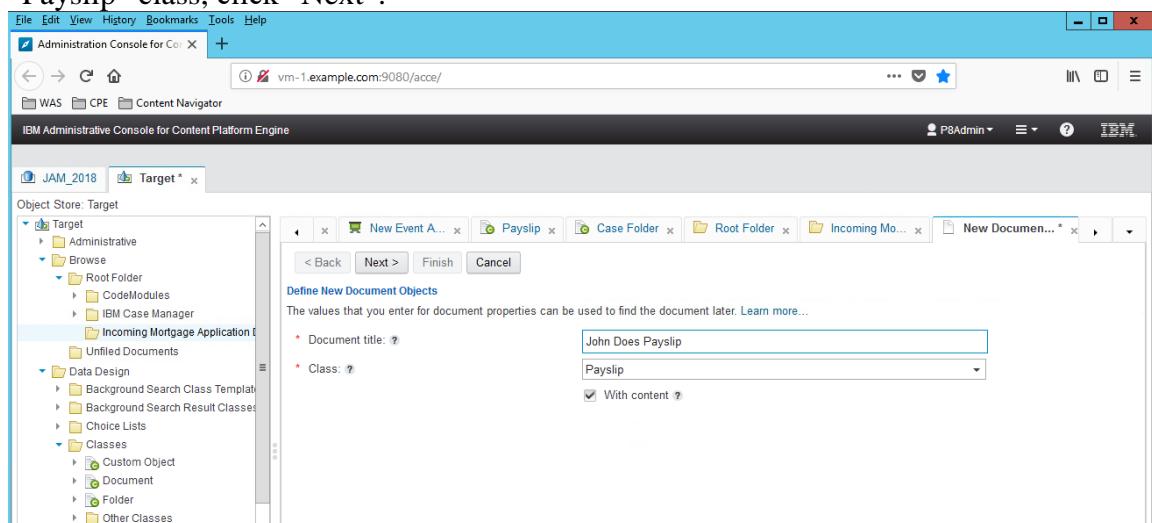
Initial state:	<input checked="" type="checkbox"/> Enable this subscription
Subclass option:	<input type="checkbox"/> Include subclasses
Subscription run mode:	<input type="checkbox"/> Run synchronously
Filter expression: ?	[Empty text input field]
Filter property name: ?	[Empty text input field]

6.4 Dynamic Filing of Payslips – Verification Instructions

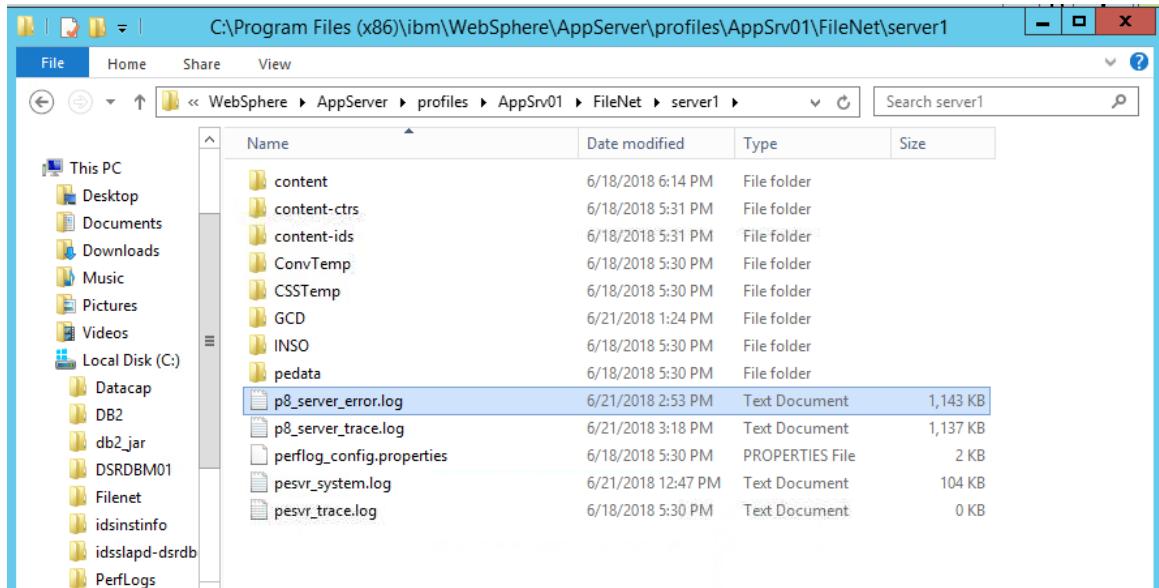
The Event Subscription created in this exercise cannot really be tested, as it can only be executed successfully, if a case folder for a customer exists. The case folder will not exist until the Workflow solution gets deployed as part of the Workflow sub-scenario, and a case has been created for processing a Mortgage Application Form of a user. Therefore, it is advised to postpone verifying this exercise, until the Case folder has been created, when working on the Workflow sub-scenario.

When doing it at an earlier stage, it can only be verified, that you get the expected error message, which is that there is no subclass of the Case Folder class with a definition of the Customer Name property.

- 1) In ACCE, in the open “Target” Object Store tab, navigate to “Browse”. Click on the “Incoming Mortgage Application Documents” folder to display it.
- 2) In the open folder window on right side, choose “Add document” from the actions menu to create a new document. Name it “John Does Payslip”, and choose the “Payslip” class, click “Next”.



- 3) On the next page, add some document from the desktop, click “Next”.
- 4) On the next page, find the “Customer Name” property near the bottom and supply the name “John Doe”. Click “Next”.
- 5) Leave all the rest of the settings unchanged, click “Next” 4 times, then “Finish”, and “Close”.
- 6) Open an Explorer window and find the FileNet Log Directory, on this path:
C:\Program Files
(x86)\ibm\WebSphere\AppServer\profiles\AppSrv01\FileNet\server1. Right-click on the file p8_server_error.log and select to open it with Notepad++



- 7) Press STRG and END keys together to go to the end of the file and find the following error message from the event subscription. All in all, you might find it up to 8 times before FileNet Content Engine gives up executing it further:

```
com.filenet.api.exception.EngineRuntimeException: FNRCR0081E:  
RETRIEVE_PROPERTY_NOT_DEFINED: The property MA_CustomerName  
is not defined. ObjectStore: "Target", SQL: "SELECT [MA_CustomerName],  
[FolderName], [PathName], [Id] FROM [CmAcmCaseFolder] WHERE  
([MA_CustomerName] = 'John Doe') AND ([CmAcmCaseState] < 3)"
```

6.5 Dynamic Filing of Payslips – Summary

In this exercise you have:

- 1) Created an Event Action with some JavaScript code and stored it in the “Target” Object Store.
- 2) Created a Subscription on the Payslip class, so that the code is executed whenever new documents of class Payslip are checked in into the FileNet Data Store.

7 Exercise: Alternative Document Upload

Duration approx.: 30 minutes

7.1 Alternative Document Upload – Introduction

When everything works as it should, new Mortgage Application documents should be uploaded by IBM Datacap. If you haven't finished the Datacap sub-scenario or plan to skip it, you can also use the alternative document upload facility you implement in this exercise using IBM Content Navigator (ICN).

IBM Content Navigator (ICN) is a web client that provides users with a console for working with content from multiple content servers. For some background of ICN, please refer to the documentation

https://www.ibm.com/support/knowledgecenter/SSEUEX_3.0.3/com.ibm.installingeuc.doc/eucao001.htm.

Entry templates save you time when the items that you are adding or checking in to a repository require the same information. For example, entry templates can specify predefined values, such as the location, class, property values, or security for the items. The information that you enter is consistently applied to all the items that you add or check in. For some background of Entry templates, please refer to the documentation https://www.ibm.com/support/knowledgecenter/SSEUEX_3.0.3/com.ibm.usingeuc.doc/euche013.htm.

In this exercise, you will create a desktop in IBM Content Navigator (ICN) which is configured to connect to a FileNet P8 repositories. In the created desktop, you will create two Entry Templates which you can use to upload the two different Mortgage Application document types.

7.2 Alternative Document Upload – High-Level Steps

- Log-on to IBM Content Navigator Administration Desktop
- Create a new desktop: Mortgage Application Desktop
- Create an Entry Template for the "Loan Application Form" document class
- Create an Entry Template for the "Payment Slip" document class
- Associate the two entry templates for usage with the "Incoming Mortgage Applications" folder
- Upload several documents using the two Entry Templates.

In this exercise you will access the following tools / resources

Tool	Location / URL
IBM Content Navigator Administration Desktop	http://vm-1.example.com:9081/navigator/?desktop=admin

7.3 Alternative Document Upload – Step by Step Instructions

To get started with this exercise, execute the following steps:

- 1) Log in to IBM Content Navigator Administration Desktop (<http://vm-1.example.com:9081/navigator/?desktop=admin>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the Repository “Target” tab by clicking “Repositories” in the left panel and then double-clicking “Target” in the listed Repositories. You will see that it is connected to the object store “Target” of the Content Platform Engine. In the following steps, you will create a desktop for the repository “Target”.

The screenshot shows the IBM Content Navigator Administration Desktop interface. On the left, there is a sidebar with various navigation options: Desktops, Repositories, Sync Services, FileNet Content Manager, Content Manager OnDemand, Daeja ViewONE, Viewer Maps, Plug-ins, Menus, Labels, Themes, Icon Mapping, Settings, Role-based Redactions, and Role-based Desktop Administration. The 'Repositories' option is selected. On the right, the main workspace has tabs for 'Desktops', 'Repositories', and 'Target'. The 'Target' tab is currently active, indicated by a blue border. Below the tabs are buttons for 'Save and Close', 'Save', 'Reset', and 'Close'. The main content area is titled 'FileNet Content Manager repository: Target'. It contains several configuration fields:

- * Display name: Target
- * ID: Target
- * Protocol: EJB
- * Server URL: iiop://vm-1.example.com:2809/FileNet/Engine
- * Object store symbolic name: Target
- * Object store display name: Target

A 'Connect...' button is located at the bottom of this section.

- 3) In the repository “Target” tab, click “Connect”. When prompted for user ID and password, use **P8Admin / Think4me**. Then click the sub-tab “Configuration Parameters”, and scroll down to “Optional Features”, select “Enable” for the “Entry template management” field, and then click “Save”.

The screenshot shows the IBM Content Navigator interface with the 'Target' tab selected. The left sidebar lists various navigation items. The main area displays configuration parameters for a new desktop. The 'General' tab is active, showing settings for approval workflows, box operations, teamspaces, and entry template management. A specific section for entry template management includes a 'Select Users and Groups...' button. Below this, the 'Creators:' field is set to '#AUTHENTICATED-USERS' and the 'Administrators:' field lists '#CREATOR-OWNER', 'P8Admin', and 'P8Admins'.

- 4) Create a desktop named “Mortgage Application Desktop”:
 - a. Open the “Desktops” tab by clicking “Desktops” in the left panel, and then open the “New Desktop” tab by clicking "New Desktop" in the “Desktops” tab.
 - b. In the sub-tab “General”, enter "Mortgage Application Desktop" as Name, and enter “MA” as ID. ***Please note that this ID is case sensitive and will be used to access the desktop later in a browser!***
 - c. Still on sub-tab “General”, please select “Target” repository as “Repository for Authentication”. Enable “Limit access to specific users and groups” and select the group “testers” and “P8Admins” to allow access and leave defaults for all other fields.

IBM Content Navigator

Desktops *New Desktop x

Save and Close Save Reset Close

Desktop: **New Desktop**

A desktop determines what the user can see and do when they log in to the web client. After you create a desktop, you can see so that they can access the desktop.

General	Repositories	Layout	Appearance	Menus	Workflows	
* Name: <input type="text" value="Mortgage Application Desktop"/>						
* ID: <input type="text" value="MA"/>						
Description:						
▼ Authentication						
* Repository: Target						
Limit access to specific users and groups: <input checked="" type="radio"/> Enable <input type="radio"/> Disable						
Select Users...						
No access:						
Allow:	<input type="button" value="testers x"/>	<input type="button" value="P8Admins x"/>				

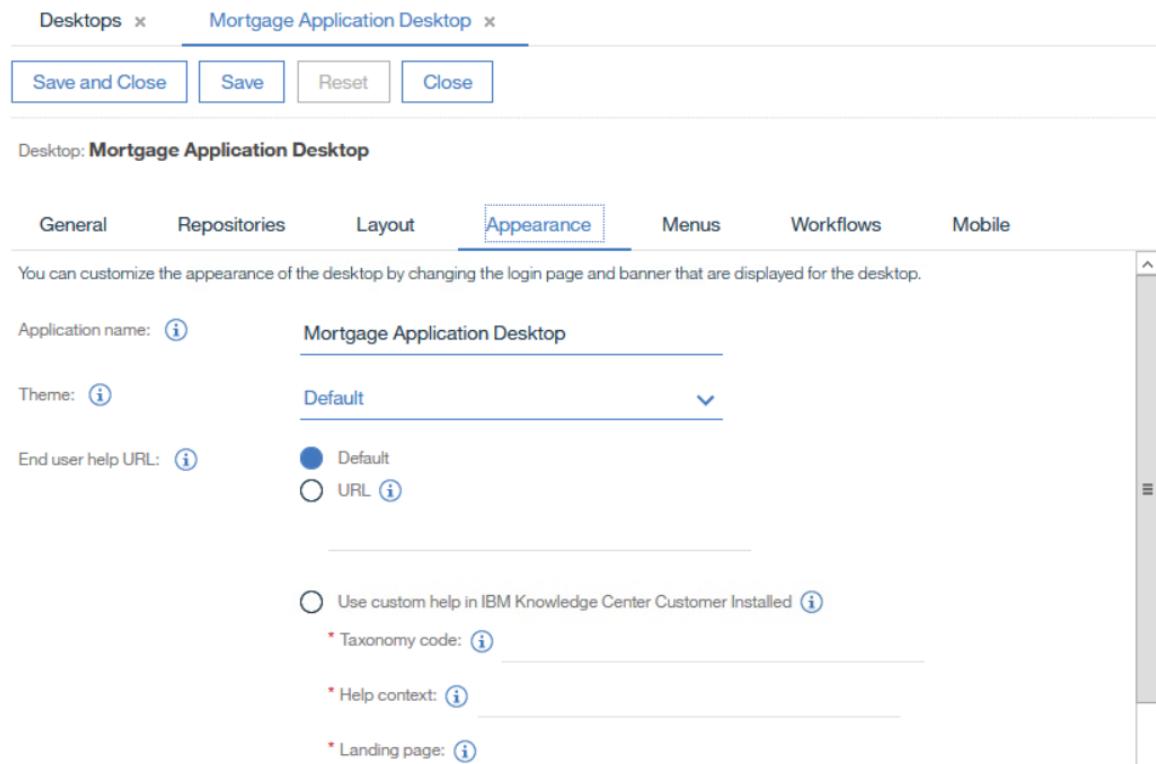
- d. In the sub-tab “Layout”, select “Entry Template Manager” from the “Displayed features”, and verify that “Target” is set as the default repository in the right panel.
 (In case you don’t see any repository listed as “Repositories” and “Default repository”, make sure you have enabled “Entry template management” for the “Target” repository before creating the desktop. If you need to make a change to the repository, make sure to close and open the desktop again to pick up these changes.)

Desktop: **New Desktop**

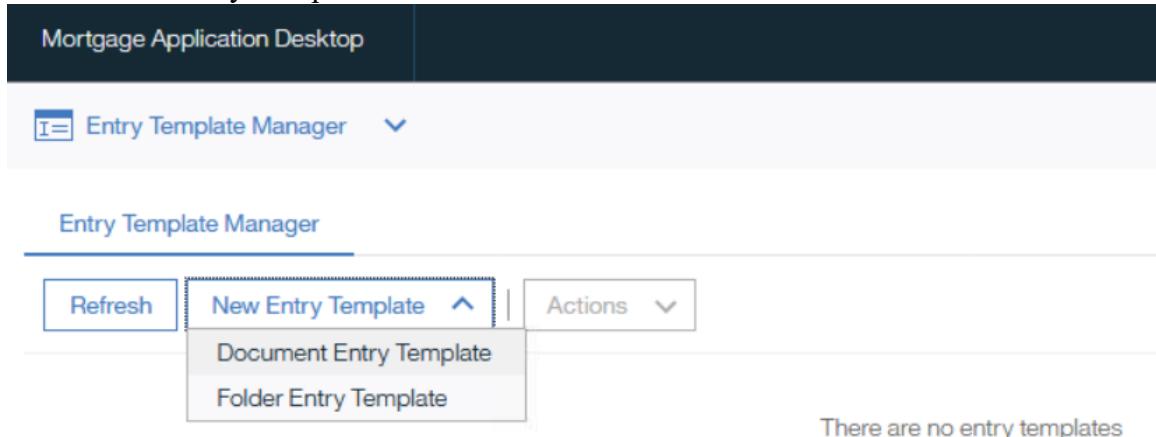
A desktop determines what the user can see and do when they log in to the web client. After you create a desktop, you can send the desktop URL to users so that they can access the desktop.

Feature	Repository
Home	Target
Browse	Target
Search	Target
Teamspace	Target
Work	Target
Entry Template Manager	Target

- e. In the sub-tab “Appearance”, enter “Mortgage Application Desktop” as Application name. Finally click “Save and Close”, and verify that the new desktop is listed on the Desktops tab.



- 5) Create an Entry Template for the "Loan Application Form" document class:
- Log in to Mortgage Application Desktop (<http://vm-1.example.com:9081/navigator/?desktop=MA>). When prompted for user ID and password, use **P8Admin / Think4me**. Please note case sensitivity!
 - Open the “Entry Template Manager” tab by clicking “Home > Entry Template Manager” in the left panel, and then click “New Entry Template > Document Entry Template”.



- c. In the section “Define the Entry Template”, set the following fields, and leave the defaults for other fields.
- Name: Loan Application Form Entry Template
 - Save in: \Target\Incoming Mortgage Application Documents
 - Share with: P8Admins, testers

The screenshot shows the 'Entry Template Manager' interface with the title 'Entry Template Manager' and a sub-tab 'New Entry Template'. Below the tabs are buttons for 'Save and Close', 'Copy', and 'Cancel'. The main area is titled 'Define the Entry Template' and contains the following fields:

- Name:** Loan Application Form Entry Template
- Save in:** Incoming Mortgage Application Docu... (dropdown menu)
- Description:** (empty text area)
- Type:** Document
- Share with:** Specific users and groups (dropdown menu) containing P8Admins and testers.

- d. In the section “Set the Item Storage Location”, set the following fields, and leave the defaults for other fields.
- Hide the Save in field: selected
 - Default Save in location: \Target\Incoming Mortgage Application Documents

The screenshot shows the 'Set the Item Storage Location' section with the following configuration:

- Show the Save in field:** Unchecked (radio button)
- Hide the Save in field:** Checked (radio button)
- Default Save in location:** Incoming Mortgage Application Docu... (dropdown menu)
- Require users to add new items to a folder:** Checked (checkbox)
- Require users to add items to the default location or a child folder of the default location:** Unchecked (checkbox)

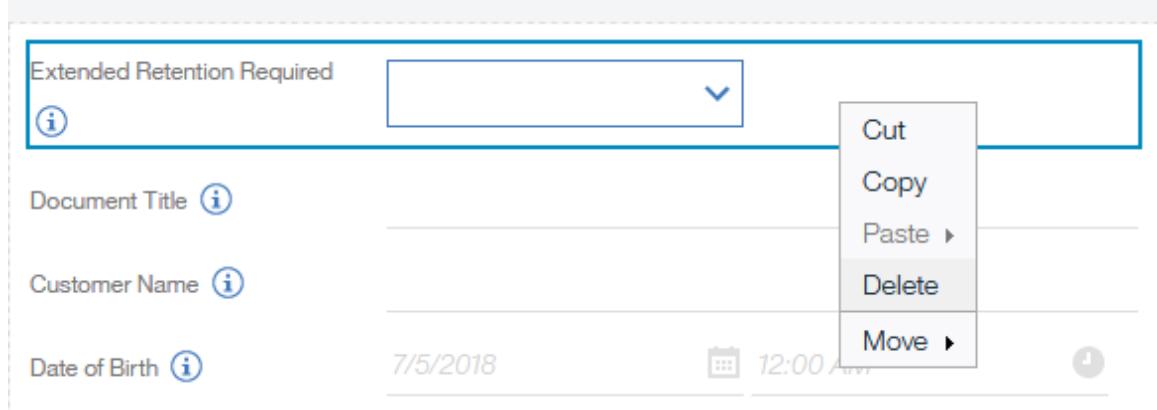
- e. In the section “Set the Item Properties”, set the Class to “Loan Application Form” and leave defaults for other fields. You can hide the field “Extended Retention Required” by clicking on “Edit Layout...”.

▼ Set the Item Properties i

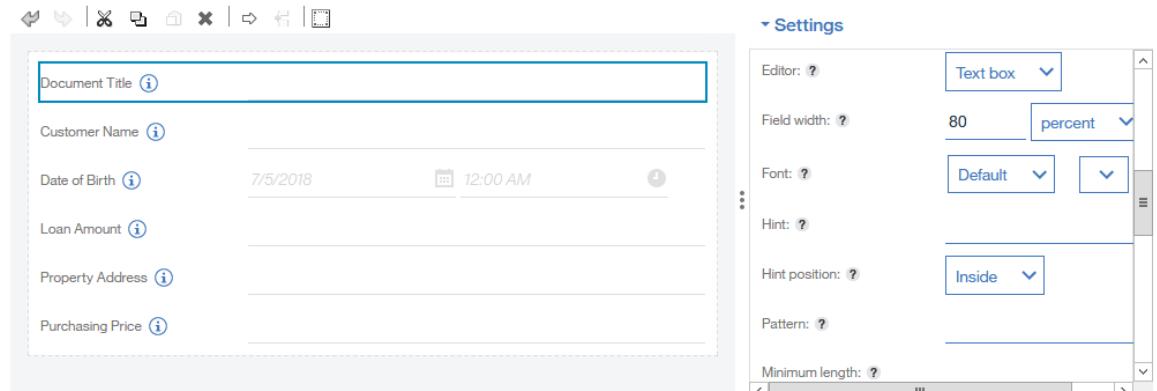
Show the **Properties** section i Hide the **Properties** section i

Class: **Loan Application Form** ▼ Edit Layout... Clear

- f. In the Layout Editor, you can right-click the field “Extended Retention Required”, and invoke Delete to hide it



- g. To get an optimal screen layout, you can also click on each of the text entry fields, one after the other, and for each of them edit the property “Field Width” to be 80 Percent.



- h. Close the Layout Editor by pressing “Save and Close” button.

Entry Template Manager *New Entry Template x

[Save and Close](#) [Copy](#) [Cancel](#)

Define the Entry Template [Set the Item Properties](#) [i](#)

Show the Properties section Hide the Properties section

Set the Item Storage Location
Set the Item Properties
Set the Item Security

Class: [Loan Application Form](#) [Edit Layout...](#) [Clear](#)

Configure a Workflow for the Item
Document Title: [i](#)

Set Options for the Item
Customer Name: [i](#)

Date of Birth: [i](#) [M/d/yyyy, h:mm a](#) [Calendar](#)

Loan Amount: [i](#)

Property Address: [i](#)

Purchasing Price: [i](#)

Extended Retention Required: [i](#)

Hidden

- i. In other sections (i.e. “Set the Item Security”, “Configure a Workflow for the Item”, “Set Options for the Item”), leave the defaults for all fields.
 - j. Click “Save and Close” to save the entry template, and then verify that your new entry template is listed in “Entry Template Manager”.
- 6) Repeat the step 5 to create another Entry Template for the “Payment Slip” document class. Note: the following fields need use different values.
- “Name” in the section “Define the Entry Template”: Payment Slip Entry Template
 - “Class” in the section “Set the Item Properties”: Payment Slip

Mortgage Application Desktop

[Entry Template Manager](#) [v](#)

Entry Template Manager

[Refresh](#) [New Entry Template](#) [Actions](#)

	Loan Application Form Entry Template
Description: Class Name: Loan Application Form Template Type: document Workflow Name:	
	Payment Slip Entry Template
Description: Class Name: Payslip Template Type: document Workflow Name:	

- 7) Associate the two Entry Templates for usage with the "Incoming Mortgage Applications" folder.
- Open the view "Browse" by switching from "Entry Template Management" to "Browse"
 - Open the view "Properties" of "Incoming Mortgage Applications" by right-clicking "Target > Incoming Mortgage Applications" and then selecting "Properties" from the context menu.

The screenshot shows the 'Mortgage Application Desktop' interface. In the center, there is a list titled 'Target > Incoming Mortgage Application Documents' containing four items:

Name	Size	Modified By	Modified On
Loan Application Form Entry Template	4 KB	P8Admin	6/20/2018
Payment Slip Entry Template	4 KB	P8Admin	6/20/2018
Test Document	19 KB	P8Admin	6/19/2018
Test Loan Application Form	19 KB	P8Admin	6/19/2018

To the left, a sidebar shows a tree structure under 'Target':

- Target
 - Incoming Mortgage Applications (selected)
 - Subfolder

A context menu is open over the 'Incoming Mortgage Applications' folder, listing options such as Open, Refresh, Properties, Add to Favorites, Export, Delete, New Folder, Add Document, Link, Send Email, Folders, and Workflow.

- c. Click “Associate Entry Templates” on the view “Properties”, and then add both “Loan Application Form Entry Template” and “Payment Slip Entry Template” and click “Save”.

Name	Description	Class Name	Template Type	Workflow Name	File Types
Loan Application Form Entry Template	Loan Application Form	document			Any type of file
Payment Slip Entry Template	Payslip	document			Any type of file

Available Entry Templates

Name	Description	Class Name	Template Type
There are no entry templates			

Save

Now you have completed to create two Entry Templates, which will be used to upload Mortgage Application documents.

7.4 Alternative Document Upload – Verification Instructions

To verify the successful completion of this exercise, you will upload two documents using the Loan Application Form Entry Template, and another two documents using the Payment Slip Entry Template.

- 1) Open the folder “Incoming Mortgage Application Documents” by clicking “Target > Incoming Mortgage Applications” in the left panel, and then click “Add Document”.

The screenshot shows a software interface titled "Mortgage Application Desktop". On the left, there's a navigation pane with a "Browse" button and a tree view showing "Target" expanded, with "Incoming Mortgage" selected. On the right, there's a main content area with a header bar containing "Refresh", "Add Document", "New Folder", and "Actions". Below this is a breadcrumb trail "Target > Incoming Mortgage Application Documents". The main content is a table listing five documents:

Name	Size	Modified By	Mod
John Does Payslip	19 KB	P8Admin	7/2/
Loan Application Form Entry Template	4 KB	P8Admin	7/2/
Payment Slip Entry Template	4 KB	P8Admin	7/2/
Test Document	19 KB	P8Admin	7/2/
Test Loan Application Form	19 KB	P8Admin	7/2/

- 2) Select “Loan Application Form Entry Template” as Entry template, choose a document from the local OS, set the following fields, and click “Add”.
 - Document Title: Loan Application Form 001
 - Customer Name: Customer001
 - Date of Birth: 07/10/1918, 12:00 AM
 - Loan Amount: 1000000
 - Property Address: Park Street 001
 - Purchasing Price: 2000000

General

- * Entry template: **Loan Application Form Entry Template**
- * Save in: **Incoming Mortgage Application Docu...**
- What do you want to save? **Local document**
- * File name: **Browse...** No files selected.
- Major version **i**

Properties

* Class: **Loan Application Form**

Document Title i	Loan Application Form 001		
Customer Name i	Customer001		
Date of Birth i	7/10/1918	12:00 AM	i
Loan Amount i	1,000,000		
Property Address i	Park Street 001		
Purchasing Price i	2,000,000		

Add Document

The values that you enter for the document properties can be used to find the document later.

Add

Cancel

- 3) Repeat steps 1~2 to upload another document using the “Loan Application Form” Entry Template. Use the following values:
 - Document Title: Loan Application Form 002
 - Customer Name: Customer002
 - Date of Birth: 07/11/1918, 12:00 AM
 - Loan Amount: 1000000
 - Property Address: Park Street 002
 - Purchasing Price: 2000000
- 4) Click “Add Document”, select “Payment Slip Entry Template” as Entry Template, select a document from the local OS, set the following fields, and click Add.
 - Document Title: Payment Slip 001
 - Customer Name: Customer001
 - Payment Date: current date
 - Net Income: 10000

The screenshot shows the 'Add Document' dialog box. On the left, there's a 'General' section with fields for 'Entry template' (Payment Slip Entry Template), 'Save in' (Incoming Mortgage Application Doc...), 'What do you want to save?' (Local document), and 'File name' (AppSrv01.PNG). Below it is a 'Properties' section where 'Class' is set to 'Payslip'. On the right, there's a summary of document details: Document Title (Payment Slip 001), Customer Name (Customer001), Payment Date (6/20/2018, 12:00 AM), and Net Income (10,000). At the bottom are 'Add' and 'Cancel' buttons.

- 5) Repeat step 4 to upload another document using the “Payment Slip Entry Template”. Use the following values:
 - Document Title: Payment Slip 002
 - Customer Name: Customer002
 - Payment Date: current date
 - Net Income: 10000
- 6) Verify that you can see all new documents under the folder “Incoming Mortgage Application Documents”.

The screenshot shows the 'Mortgage Application Desktop' interface. The left sidebar has a 'Target' section with 'Incoming Mortgage...' selected. The main area displays a list of documents in the 'Incoming Mortgage Application Documents' folder. The table includes columns for Name, Size, Modified By, and Modified On. The list contains:

Name	Size	Modified By	Modified On
Loan Application Form 001	19 KB	P8Admin	6/20/2018
Loan Application Form 002	19 KB	P8Admin	6/20/2018
Loan Application Form Entry Template	4 KB	P8Admin	6/20/2018
Payment Slip 001	19 KB	P8Admin	6/20/2018
Payment Slip 002	19 KB	P8Admin	6/20/2018
Payment Slip Entry Template	4 KB	P8Admin	6/20/2018
Test Document	19 KB	P8Admin	6/15/2018
Test Loan Application Form	19 KB	P8Admin	6/15/2018

 To the right, there are sections for 'Properties' and 'System Properties'.

7.5 Alternative Document Upload – Summary

In this exercise you have:

- 1) Created a desktop named Mortgage Application Desktop.
- 2) Created an Entry Template for the "Loan Application Form" document class.
- 3) Created an Entry Template for the "Payment Slip" document class.
- 4) Associated the two Entry Templates for usage with the "Incoming Mortgage Applications" folder.
- 5) Uploaded two documents using the "Loan Application Form Entry Template" and two documents using the "Payment Slip Entry Template".

8 Exercise: Configure ICN Search

The Search templates configured in this exercise are not needed in the end-to-end scenario. Because of this, it is not needed to complete the exercise, if the target is to complete the end-to-end scenario.

Duration approx.: 30 minutes

8.1 Configure ICN Search – Introduction

The Content Platform Engine Administrative Console (ACCE) is not meant to be used directly by end-users, although it can be accessed by them. As a means for finding and displaying Mortgage Application attachments, you can set up and save respective searches in IBM Content Navigator (ICN).

For some background on ICN searches, please refer to the documentation

https://www.ibm.com/support/knowledgecenter/SSEUEX_3.0.3/com.ibm.usingeuc.doc/euche037.htm.

In this exercise, you will create three ICN searches to search your example Mortgage Application documents created in Exercise 7.

8.2 Configure ICN Search – High-Level Steps

- Log-on to IBM Content Navigator Administration Desktop, and visit the Search setting for the repository “Target”
- Create and run a search for Mortgage Application documents, with parameters for (the beginning of) the Document Title, Customer Name and the Creation Date (from - to),
- Create and run a search for Mortgage Application documents which are filed in the folder "Incoming Mortgage Application Documents",
- Create and run a search for Mortgage Application documents based on words contained in the document title.

In this exercise you will access the following tools / resources

Tool	Location / URL
IBM Content Navigator Administration Desktop	http://vm-1.example.com:9081/navigator/?desktop=admin
Mortgage Application Desktop created in Exercise 7	http://vm-1.example.com:9081/navigator/?desktop=MA

8.3 Configure ICN Search – Step by Step Instructions

To get started with this exercise, execute the following steps:

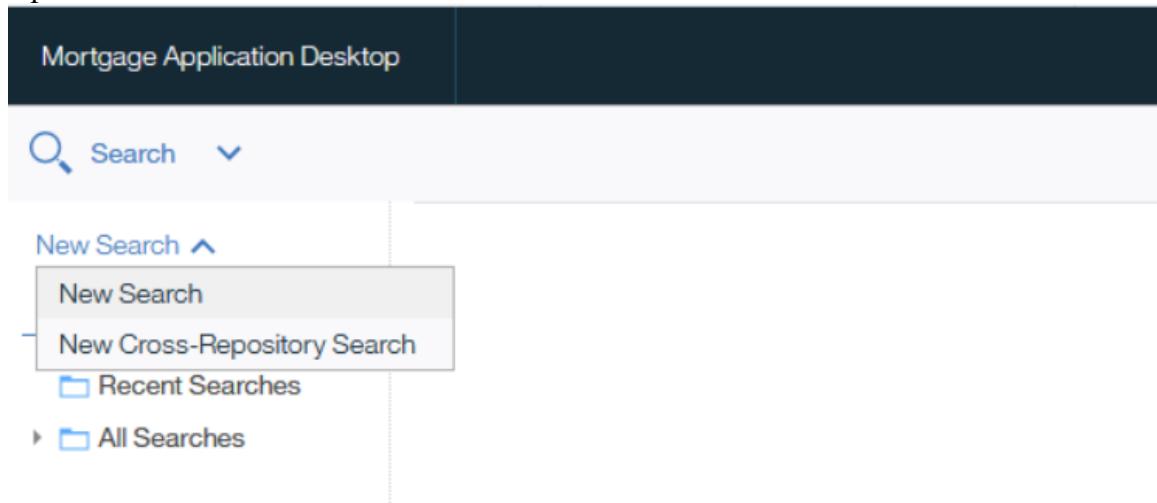
- 1) Log in to IBM Content Navigator Administration Desktop (<http://vm-1.example.com:9081/navigator/?desktop=admin>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the Repository “Target” tab by clicking “Repositories” in the left panel and then double-clicking “Target” in the listed Repositories.
- 3) In the repository “Target” tab, click “Connect”. When prompted for user ID and password, use **P8Admin / Think4me**. Next click the sub-tab “Search”, you will see many Search options which can be customized. For example, you might modify the maximum search time, or narrow down the maximum number of search results.

The screenshot shows the IBM Content Navigator Administration Desktop interface. On the left, there is a sidebar with various navigation links: Desktops, Repositories, Sync Services, FileNet Content Manager, Content Manager OnDemand, Daeja ViewONE, Viewer Maps, Plug-ins, Menus, Labels, Themes, Icon Mapping, Settings, Role-based Redactions, and Role-based Desktop Administration. The main area has three tabs at the top: Desktops, Repositories, and Target. The Target tab is selected and active. Below the tabs are four buttons: Save and Close, Save, Reset, and Close. The main content area is titled "FileNet Content Manager repository: Target". It contains several configuration sections:

- "Specify which options are selected by default when users create a search." This section includes settings for "Cross-repository searches" (radio buttons for Enable and Disable), "Number of results" (radio buttons for No limit and Limit to 5,000), "Timeout (in seconds)" (radio buttons for No limit and Limit to 60), "Match" (radio buttons for Match all of the search criteria and Match any of the search criteria), and "Allow search on" (checkboxes for Documents and Folders).
- "Default search type" (radio buttons for Documents and Folders).
- "Default search version" (radio buttons for Released version, Current version, and All versions).
- A collapsed section labeled "Search Roles" with a note: "Ensure that users have access to a desktop that supports their role. For example, ensure that search creators have access to a desktop that allows them to create searches and cross-repository searches."

- 4) Log in to the Mortgage Application Desktop created in Exercise 7 (<http://vm-1.example.com:9081/navigator/?desktop=MA>). When prompted for user ID and password, use **P8Admin / Think4me**.

- 5) Open the “Search” view and click “New Search > New Search”.



- 6) Create “Search001”: a search for Mortgage Application documents, with parameters for (the beginning of) the Document Title, Customer Name and the Creation Date (from - to).

- a) Set the search criteria as below

- Class: Mortgage Application Attachment
- Document Title: Starts With “Loan”
- Customer Name: Equals “Customer001”
- Added On: Between “7/10/2018” and “7/13/2018”

The screenshot shows the 'New Search' configuration page. On the left, there's a sidebar with 'New Search' and 'Search name contains' (with 'Recent Searches' and 'All Searches' options). The main area has a title 'New Search x'. Under 'Search Criteria', there are three sections: 'Search in: \Target (Including subfolders)' and 'Search options: Documents, Released version'; 'Class: Mortgage Application Attachment (Incl ...)'; and three filters: 'Document Title Starts With Loan', 'Customer Name Equals Customer001', and 'Added On Between 6/19/2018 and 6/21/2018'. At the bottom, there are buttons for 'Add Property', 'Show All Properties', 'Property options: Match all', and standard search controls: 'Search', 'Reset', 'Save', 'Save As...', 'Cancel', 'Results Display', and a checkbox 'Keep search criteria open'.

- b) Click “Search” to see the documents matching the search criteria.

The screenshot shows the "New Search" interface. At the top, there's a "Search Criteria" section and a "Search Results" section. Below the search results, there are buttons for "Refresh", "Add Document", and "Actions". The results table has columns for Name, Size, Modified By, Modified On, and Major Version. One result is listed: "Loan Application Form 001" (19 KB, P8Admin, 6/20/2018, 6:57 AM, Major Version 1).

- c) Click “Search Criteria”, click “Save”, enter “Search001” as Name, and then click “OK”.

Save Search

The screenshot shows the "Save Search" dialog box. It has fields for "Name" (Search001), "Description" (empty), "Save in" (Target), and checkboxes for "Run the search when opened" (unchecked) and "Show the search in the folder structure" (checked). There's also a "Share search with:" dropdown set to "Only me" and a "Select..." button. At the bottom are "OK" and "Cancel" buttons.

- 7) Create “Search002”: a search for Mortgage Application documents which are filed in the folder "Incoming Mortgage Application Documents".

a) Set the search criteria as below

- Search In: \Target\Incoming Mortgage Application Documents
- Class: Mortgage Application Attachment

The screenshot shows the 'Mortgage Application Desktop' interface with a 'Search' bar at the top. Below it is a 'New Search' dialog. On the left, there's a sidebar with 'Recent Searches' (Search001) and 'All Searches' (Search001). The main area has 'Search Criteria' fields for 'Search in:' (\Target\Incoming Mortgage Application...) and 'Class:' (Mortgage Application Attachment (Incl...)). Below these are dropdowns for 'Document Title' (Starts With) and buttons for 'Add Property', 'Show All Properties', and 'Property options: Match all'. At the bottom are buttons for 'Search', 'Reset', 'Save', 'Save As...', 'Cancel', and 'Results Display', along with a checkbox for 'Keep search criteria open'.

b) Click “Search” to see the returned documents

The screenshot shows the 'Search Results' interface. It has a 'Search Criteria' section at the top. Below it is a table titled 'Showing results for: New Search' with columns: Name, Size, Modified By, Modified On, and Major Version. The table contains the following data:

Name	Size	Modified By	Modified On	Major Version
John Does Payslip	19 KB	P8Admin	7/2/2018, 9:25 AM	1
Loan Application Form 001	19 KB	P8Admin	7/2/2018, 10:17 AM	1
Loan Application Form 002	19 KB	P8Admin	7/2/2018, 10:18 AM	1
Payment Slip 001	19 KB	P8Admin	7/2/2018, 10:19 AM	1
Payment Slip 002	19 KB	P8Admin	7/2/2018, 10:20 AM	1
Test Loan Application Form	19 KB	P8Admin	7/2/2018, 9:17 AM	1

c) Click “Search Criteria”, and then click “Save”, and enter “Search002” as Name, and then click “OK”.

- 8) Create “Search003”: a search for Mortgage Application documents based on words contained in the document title.

- a) Set the search criteria as below
- Class: Mortgage Application Attachment
 - Document Title: Like “001”

The screenshot shows the 'Mortgage Application Desktop' search interface. On the left, there's a sidebar with 'Recent Searches' (Search002, Search001) and 'All Searches' (Search001, Search002). The main area is titled 'New Search' and contains 'Search Criteria'. It includes fields for 'Search in' (set to '\Target (Including subfolders)'), 'Class' (set to 'Mortgage Application Attachment (Incl...)'), and 'Document Title' (set to 'Like 001'). Below these are buttons for 'Add Property', 'Show All Properties', and 'Property options: Match all'.

- b) Click “Search” to see the documents matching the search criteria.

The screenshot shows the search results page. At the top, there are buttons for 'Refresh', 'Add Document', and 'Actions'. Below that, it says 'Showing results for: New Search'. A table lists the results:

Name	Size	Modified By	Modified On	Major Version
Loan Application Form 001	19 KB	P8Admin	6/20/2018, 6:57 AM	1
Payment Slip 001	19 KB	P8Admin	6/20/2018, 7:17 AM	1

At the bottom, it says 'Total: 2'.

- c) Click “Search Criteria”, click “Save”, enter “Search003” as Name, and then click “OK”.

You have now completed to create and run three ICN Searches based on different search criteria.

8.4 Configure ICN Search – Verification Instructions

Nothing to be done.

8.5 Configure ICN Search – Summary

In this exercise you have:

- 1) Looked at the available Search setting for the repository “Target”,
- 2) created and run a search for Mortgage Application documents, with parameters for (the beginning of) the Document Title, Customer Name and the Creation Date (from - to),
- 3) created and run a search for Mortgage Application documents which are filed in the folder "Incoming Mortgage Application Documents",
- 4) created and run a search for Mortgage Application documents based on words contained in the document title.

9 Exercise (Optional): Prototyping enhancements to the Mortgage Application solution

Please note that the extensions to the Mortgage Application document classes, which are designed in this exercise, are prototypes only and are implemented in the Development Object Store. The extensions will not be used in the end-to-end scenario. They are meant to showcase some core concepts of the Content Platform Engine (CPE) that are not part of the other exercises. Therefore, this exercise is also not required to complete the other sub-scenarios and is optional.

Duration is approx. 60 minutes.

9.1 Prototyping Enhancements – Introduction

For this exercise, you have been tasked to implement extensions to fulfil new requirements of the Mortgage Application solution for one of the next releases:

- a) It was noted, that customers typically don't require the loan immediately, but at a later date. The Mortgage Application Form should be extended with a new date property called "Loan Start Date".
- b) From the first few months of usage of the Mortgage Application solution, your line of business provided feedback that often the Property Address or the Purchasing Price need to be updated after the Mortgage Application Form was initially provided by the customer. The decision has been made to formalize this by introducing a new Loan Update Form, for which you have been requested to create the new document class and property templates.
- c) A set of different reviewers shall work on reviewing the Mortgage Application documents. Reviewers shall be assigned to the (Case) Folder where the Mortgage Application documents are filed to. Initially, three sets of reviewers have been appointed, one for the Americas, one for Europe and Africa, and one for Asia. You have been asked to implement security settings in Content Platform Engine.

9.2 Prototyping Enhancements – High-Level steps

Property Templates are blueprints for the property definitions of a class. When adding them to a class, the property values of the Property Template are copied into the new property definition of the class. For example, a Property Template that is indicating that the value is required: when you change it in the Property Template that does not affect the property definitions in the classes, it only affects the property definitions which are newly added to a class. For more details on Properties and Property Templates please refer to the documentation, please see

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.dev.ce.doc/property_concepts.htm#property_concepts_property_templates

To implement requirement a), you will need to define a new property template “Loan Start Date” and add that property template to the existing “Loan Application Form” class. The property should be optional, with a null value as the default date, which is the default.

High-level steps: (For the detailed steps see section 9.3.1):

- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Development” object store
- Define a new Property Template “Loan Start Date” of type DateTime.
- Add a new Property Definition for “Loan Start Date” using the Property Template
- Modify the Property Definition for “Customer Name” and modify it to require a value
- Propagate the changes to the metadata of the Mortgage Application Attachment class to the subclasses

Classes are one of the core building blocks in FileNet Content Platform Engine. They store common metadata of the objects in a FileNet P8 environment, much like in an object-oriented programming language, with the difference that most of the objects in a FileNet P8 environment are persistent. They are subdivided into “Document” classes having content, “Folder” classes, “Custom Objects” (business objects without content), and “Other classes” from which the infrastructure of the FileNet P8 environment is built. For more details please see

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.ce.dev.ce.doc/class_concepts.htm

To implement requirement b), you will need to define a new document class “Loan Update Form”. It should also be a subclass of “Mortgage Application Attachment”, from which it will automatically inherit the “Customer Name”-property. Additional to the Customer Name it requires the properties “Property Address”, “Loan Amount” and “Loan Start Date”. All properties except the Customer Name are optional.

High-level steps: (For the detailed steps see section 9.3.2)

- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Development” object store
- Create new subclass “Loan Update Form” for class “Mortgage Application Attachment”. Add property definitions for the following Property Templates:
 - Property Address
 - Purchasing Price
 - Loan Start Date
 - Loan Amount

For requirement c), you have been notified that members of the reviewer teams might change often. Therefore, it would not be appropriate to use LDAP groups for implementing the security, as for the update of the LDAP groups, you would need to rely on the work of your colleagues from the Operations department, who are very busy and might not be able to provide changes quickly enough. You will instead use “Security Roles”, a new feature of the Content Platform Engine 5.5. In Content Platform Engine 5.5, security roles have been added as a second source of security configuration, in addition to “Access Control Lists” (ACL). One of their advantages is the ability to change the members to which security settings apply consistently and easily by modifying just the security role not the individual objects' ACL. This easily works also after security settings have been applied to millions of objects in Content Platform Engine. Read more about Security Roles in the documentation in topic “Understanding role-based access” available through this link:

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.security.doc/p8psa081.htm.

To define the security roles, it is required to create a “Reviewer” subclass of the “Static Role” class to define the class for the new role, as the first step. By choosing “Static Role” you specify that the members of the role are specifically chosen, as is the case here. The class “Dynamic Role” on the other hand would allow you to specify with some Java or JavaScript code, if a given user is member of the role, or not.

As the next step, the new “Reviewer” subclass will be instantiated three times to define our three roles for reviewers in the Americas, in Europe and Africa, and in Asia.

High-Level steps: (For the details on the steps required, see section 9.3.3)

- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Development” object store
- Create a new subclass “Reviewer Role” of the “Static Role” class, and add Access Role Definitions for the Mortgage Application Attachment document class, and the Folder class, according to following table

Class	Mortgage Application Attachment	Folder
Required access	View all Properties Modify all Properties View Content	View all Properties Modify all Properties File in Folder / Annotate

	Link a document / Annotate Create Instance Read permissions	Unfile from Folder Create Instance Create Subfolder Read permissions
--	--	---

- Create three Roles for the Reviewer Role class, named “Reviewer Europe and Africa”. “Reviewer US” and “Reviewer Asia”. For “Reviewer Europe and Africa” and the “testers” LDAP Group.

Furthermore, the Mortgage Application documents will need to use the security settings for the folders they have been filed into. The approach you will take for this is to inherit the security from one of the folders where they have been filed into. In Content Platform Engine this can be done using “Security Inheritance”. Again, the documentation has more details on Security Inheritance, which you can review in topic “Understanding security inheritance”, available through this link:

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.security.doc/p8psa081.htm.

High-level steps: (For the details on the steps required, see section 9.3.4)

- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Development” object store
- Review the default instance security for the “Mortgage Application Attachment” class and its subclasses. For each remove the testers group from Default Instance Security. New documents cannot be seen by the “testers” anymore now, no changes done to existing documents.
- Modify the Default Instance Security for the Folder class as well, remove the “testers” group from it.
- Create two Folders on the “Root Folder” level named “Folder for review”, and “Folder without review”.
- On the “Folder for review” add a Role permission for the “Reviewer for Europe and Africa” role, to be inheritable to “this object and all children”.
- Add a document of class “Loan Application Form” to the “Folder for review” class.
- Test it by logging on as “tester”, only the “Folder for review” is visible, neither the other folder, nor the document can be seen.
- For the test document, copy the value of property “Container” to the property “Security Parent” and review that the security now shows the inherited security role.
- Test it again by logging on as “tester”, the “Folder for review” now contains the test document, and allows modification of its property values.

The setting of the Security Parent property is not meant to be done manually, but can be automated. To automate it, an Event Subscription class can be setup.

High-level steps: (For the details on the steps required, see section 9.3.5)

- Download the file “ApplySecurityInheritance.jar” from the ECM sub-scenario folder of the “DBA Demos and Labs – Material”.

- Log-on to Content Platform Engine Administrative Console (ACCE), on the “Development” object store
- Create a new Event Action of type Java, for the method name “ibm.DBADemosAndLabs.ECMss.ApplySecurityInheritance “. Choose to also configure the Code Module and select the downloaded jar file for the code module.
- Configure a new subscription on the Create event of Class “Dynamic Referential Containment Relationship”, and configure it to asynchronously execute the new event action.
- Create a new Payslip document in the “Folder for Review” class and observe the security role for “Reviewer Europe and Africa” already inherited from the folder

9.3 Prototyping Enhancements – Step by Step Instructions

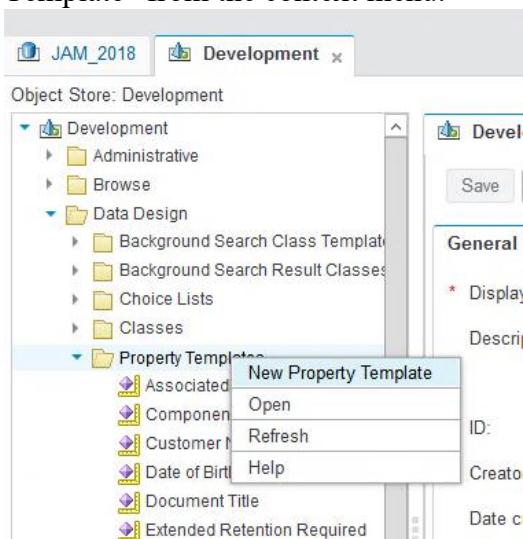
In this exercise you will access the following tools / resources

Tool	Location / URL
Content Platform Engine Administrative Console (ACCE)	http://vm-1.example.com:9080/acce
DBA Demos and Labs – Material	https://ibm.ent.box.com/folder/53519546579?sortColumn=name&sortDirection=ASC

9.3.1 Adding of Loan Start Date Property Template

To complete this exercise, execute the following steps:

- 1) Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the object store "Development" by clicking "JAM_2018 > Object Stores > Development" in the left panel.
- 3) In the "Development" Object store, navigate to "Data Design > Property Templates". Right-click on "Property Templates" and choose "New Property Template" from the context menu.



- 4) In the "New Property Template" window, provide the Display name "Loan Start Date", and provide the symbolic name "MA_LoanStartDate".
The display name is the default name for displaying the properties, translation for it to different languages can be provided, and it can be changed. The symbolic name is used, when the property needs to be referenced, e.g. in searches. All symbolic names for the Mortgage Application have been prefixed with "MA_"

according to best practices, because that way they can be differentiated from names for other entities.

The screenshot shows the 'New Property...' dialog box with the title 'Development' and 'New Property... *'. Below the title are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. The main area is titled 'Name and Describe the Property Template' with the sub-instruction: 'A property template is a collection of metadata properties that globally define custom properties. You can assign properties to classes of an object you must assign a unique name within a class family.' There are three input fields: 'Display name:' (Loan Start Date), 'Symbolic name:' (MA_LoanStartDate), and 'Description:' (Loan Start Date). To the right is a scrollable list of existing names: AssociatedPropertyID, Component Binding Label, ComponentBindingLabel, Customer Name, Date of Birth, Document Title, DocumentTitle, Extended Retention Required, IsHiddenContainer, and Loan Amount.

- 5) Press “Next”. On the next page the “Data Type” can be specified. Choose “Date Time”

The screenshot shows the 'New Property...' dialog box with the title 'Development' and 'New Property... *'. Below the title are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. The main area is titled 'Select the Data Type' with the sub-instruction: 'The data type defines the kind of data the property template will contain. You cannot change this data type after the property template is created. [Learn more...](#)' There is one input field: 'Data type:' with a dropdown menu showing 'Date Time'.

Press “Next”. On the next page it can be specified, if the new Property Template will represent a Single value or Multi values. Choose “Multi” if you need to specify multiple values, such as a list of telephone numbers, or a list of authors. Leave the default “Single” selected and enable “Set other attributes” to specify other, more rarely defined attributes.

The screenshot shows the 'New Property...' dialog box with the title 'Development' and 'New Property... *'. Below the title are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. The main area is titled 'Single or Multi-Value?' with the sub-instruction: 'Choose whether the object property can hold a single value or multiple values. Most properties are single value, but if the property will contain a list, then choose multi-value.' There are two sections: 'Single or multi-value:' with radio buttons for 'Single' (selected) and 'Multi', and 'List order:' with radio buttons for 'Non-unique and ordered values (such as lines in address)' and 'Unique and ordered values (such as the list of primary colors)'. At the bottom is a checked checkbox for 'Set other attributes'.

- 6) Press “Next”. On the next page some further details on the new property template can be defined. Please check that “Value required” is not set. If enabling this, providing a value would be required when creating a new instance of a class with this property template. For numeric attributes, also minimum and maximum values can be specified.

The screenshot shows a software interface for creating a new property template. At the top, there are tabs for 'Development' and 'New Property... *'. Below the tabs are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. The main area is titled 'Additional Property Template Attributes' with the sub-instruction 'Set other property template attributes.' Below this, there are several configuration fields:

- Persistence:** A dropdown menu currently set to 'System Table'.
- Settability:** A dropdown menu currently set to 'Read-Write'.
- Category:** An empty input field.
- Minimum value:** An empty input field.
- Maximum value:** An empty input field.
- Default value:** An empty input field.
- Audit as:** A dropdown menu currently set to 'Audit as'.
- Value required:** A checkbox that is unchecked.
- Name property:** A checkbox that is unchecked.
- Hidden:** A checkbox that is unchecked.

- 7) Press “Next”. On the next page, it can be specified, which access rights to the document object someone must have, before they can modify the property values. No changes are required here.

Access Rights
You can specify the access rights that are required of users to change the value of a property for an object.

Modification Access Required:

<input type="checkbox"/>	View all properties
<input type="checkbox"/>	Modify all properties
<input type="checkbox"/>	Reserved12 (Deploy is deprecated)
<input type="checkbox"/>	Reserved13 (Archive is deprecated)
<input type="checkbox"/>	Link / Annotate
<input type="checkbox"/>	Create instance
<input type="checkbox"/>	Delete
<input type="checkbox"/>	Read permissions
<input type="checkbox"/>	Modify permissions
<input type="checkbox"/>	Modify owner
<input type="checkbox"/>	Delegate access
<input type="checkbox"/>	View content
<input type="checkbox"/>	Link a document / Annotate
<input type="checkbox"/>	Publish

Select All **Clear All**

- 8) Press “Next”. On the summary page, press “Finish”. When the property template has been created, press “Close”.
- 9) On the navigation pane on the left side of ACCE, navigate to the “Mortgage Application Attachment” document class. You find it in “Data Design > Classes > Document > Mortgage Application Attachment”. Click on the class to display its properties on the right side of ACCE. Choose the “Property Definitions” tab.

	Property	Data Type	Is Name	Is Inherited	Is System	Table Name	Column Name
<input type="checkbox"/>	Extended Retention Required	Boolean				DocVersion	u4292_ma_extendedretentionre
<input type="checkbox"/>	Customer Name	String				DocVersion	u91b8_ma_customername

- 10) Click on the “Customer Name” property, to check the Property Definition. Note that this is not taking you to the Property Template for “Customer Name”. The Property Template for “Customer Name” has been copied into the “Property Definition” upon instantiation of the property definition in the Class “Mortgage Application”.
- 11) In the Property Definition for the “Customer Name” property, choose the “More” tab and set the “Value required” option, then press “Save”.

Property Definition

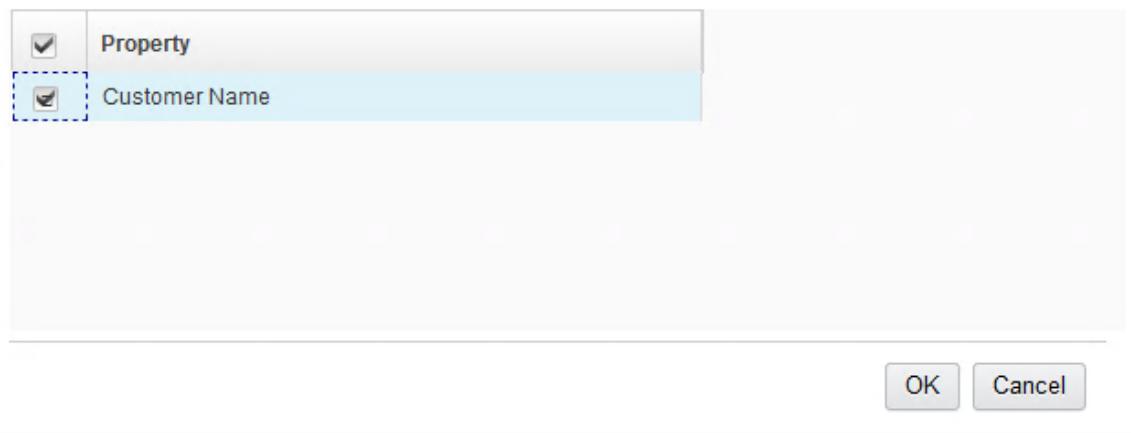
General	Alias IDs	More	Modification Access
Assign choice list: ?	<input type="button" value=""/>		
<input checked="" type="checkbox"/> Value required ?			
Persistence:	System Table		
Settability:	Read-Write		
Audit as: ?	<input type="button" value=""/>		
<input type="checkbox"/> Hidden ?			
Maximum string length: ?	40		
Default value: ?	<input type="button" value=""/>		
<input type="checkbox"/> Use long-string table column ?			
<input checked="" type="checkbox"/> Copy to reservation			
<input type="checkbox"/> Name property ?			

- 12) The “Propagate Metadata Changes” window appears. With this functionality, you can propagate the change made to the “Customer name” property to the subclasses. Enable the propagation for the change to “Customer Name”, then press “OK”.

Propagate Metadata Changes

Select the property definitions whose changes you want to propagate to all subclasses.

Updated Property Definitions [?](#)



- 13) In the navigation pane on the left, navigate to the “Loan Application Form” class. You find it in “Data Design > Classes > Document > Mortgage Application Attachment > Loan Application Form”. Click on it to display its properties. In the properties window of the “Loan Application Form”, choose the “Property Definitions” tab. Enable the option to see the inherited properties, and scroll to the bottom of the properties displayed.

Property	Data Type	Is Name	Is Inherited	Is System	Table Name	Column Name
Retention Date	Date Time		True	True	DocVersion	Customer_Retention_Date
thumbnails	Object		True	True		
Document Title	String	True	True		DocVersion	u1708_documenttitle
Component Binding Label	String		True		DocVersion	u2e28_componentbindinglabel
Extended Retention Required	Boolean		True		DocVersion	u4292_ma_extendedretentionre
Customer Name	String		True		DocVersion	u91b8_ma_customername
Date of Birth	Date Time				DocVersion	u8933_ma_madate
Loan Amount	Float				DocVersion	uc574_ma_loanamount
Property Address	String				DocVersion	ud0ef_ma_propertyaddress
Purchasing Price	Float				DocVersion	u1d44_ma_purchasingprice

- 14) Click on the “Customer Name” property link to open the Properties of the Property Definition for “Customer Name”. In the “Property Definition”-window, choose the “More” tab and check that the “Value required” option is enabled. Then close the “Property Definitions”-window.

The screenshot shows the 'Property Definition' dialog box. At the top, there are tabs: 'General', 'Alias IDs', 'More' (which is selected and highlighted in blue), and 'Modification Access'. The main area contains several configuration options:

- Assign choice list:** A dropdown menu.
- Persistence:** Set to 'System Table'.
- Settability:** Set to 'Read-Write'.
- Audit as:** A dropdown menu.
- Maximum string length:** Set to '40'.
- Default value:** An empty text input field.
- Advanced Options:**
 - Value required
 - Hidden
 - Use long-string table column
 - Copy to reservation
 - Name property

- 15) If it is not showing enabled, it might be you had the Loan Application Form class properties window open already, before making the change to the “Customer Name” Property. Close the Property Definition, and press “Refresh” on the class. Then re-open the Property Definition for “Customer Name” again and check the “Value Required” option again.
- 16) Press “Add” on the “Property Definitions” tab of the “Loan Application Form” class, to add the new property for the Loan Start Date. Select “Loan Start Date” in

the “Add Property”-window, then press “OK”.

Add Properties

Use Ctrl+click to select more than one property in the list.

Property	Data Type	Id	
PropertyLookupName	String	{BD08B103-7C12-4361-AF28-C5A9EFB82698}	
IsHiddenContainer	Boolean	{24A43E2B-6DC4-4E3B-93DE-21E31326D5F3}	
Net Income	Float	{FAC70A6E-78F2-454C-8C9C-3A9B28DB0865}	
Loan Start Date	Date Time	{E61C707A-124E-4603-887A-985FD4C3437F}	
AssociatedPropertyID	ID	{92C69396-6CE8-4684-BA82-67E2E226E611}	
Payment Date	Date Time	{43BC4EA6-C829-4E0C-8F5A-FF17634F914B}	
LookupList	String	{FEDC63C5-566F-4F9F-904A-8ABDA3D5583B}	
LookupIDList	String	{C16B99FE-136E-4E73-97D4-8A106E1530E9}	

Please note the Id shown might be differently, in your environment.

- 17) Check that a new property appears for the “Loan Start Date”. As the change was not yet saved to the database, the information for the table and the column where the data is persisted are not shown yet. Press the “Save” button on the Class Definition for “Loan Application Form”.

The screenshot shows the 'Class Definition' interface for 'Loan Application Form'. At the top, there are tabs for 'General', 'Properties', 'Property Definitions', 'Default Instance Security', 'Security Policy', 'Security', 'Retention', and 'Change Preprocessor Definitions'. The 'Properties' tab is selected. Below the tabs, there are buttons for 'Save', 'Refresh', 'Actions', 'Close', 'Add', 'Remove', and 'Propagate'. A checkbox 'Display inherited properties' is checked, while 'Display system properties' is unchecked. The main area is a table listing properties:

Property	Data Type	Is Name	Is Inherited	Is System	Table Name	Column Name
Document Title	String	True	True		DocVersion	u1708_documenttitle
Component Binding Label	String		True		DocVersion	u2e28_componentbindinglabel
Extended Retention Required	Boolean		True		DocVersion	u4292_ma_extendedretentionre
Customer Name	String		True		DocVersion	u91b8_ma_customername
Date of Birth	Date Time				DocVersion	u8933_ma_madate
Loan Amount	Float				DocVersion	uc574_ma_loanamount
Property Address	String				DocVersion	ud0ef_ma_propertyaddress
Purchasing Price	Float				DocVersion	u1d44_ma_purchasingprice
Loan Start Date	Date Time					...

- 18) After the “Save” the class definition is automatically refreshed. Check that now the information for the table Name and Column Name are shown.

	Property	Data Type	Is Name	Is Inherited	Is System	Table Name	Column Name
<input type="checkbox"/>	Date of Birth	Date Time				DocVersion	u8933_ma_madate
<input type="checkbox"/>	Loan Amount	Float				DocVersion	uc574_ma_loanamount
<input type="checkbox"/>	Property Address	String				DocVersion	ud0ef_ma_propertyaddress
<input type="checkbox"/>	Purchasing Price	Float				DocVersion	u1d44_ma_purchasingprice
<input type="checkbox"/>	Loan Start Date	Date Time				DocVersion	u8023_ma_loanstartdate

- 19) By clicking on “Loan Start Date”, please review that no value for this property will be required, and that the default value for the option is an empty (null) value. Close the Property Definition for “Loan Start Date” again by pressing “Cancel”.

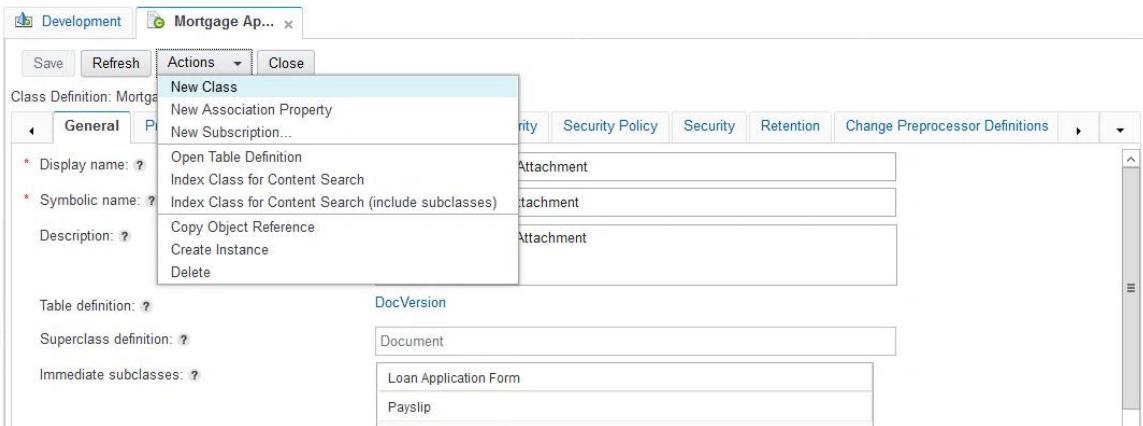
Any newly created Loan Application Form, will now require a value for the “Customer Name” property, and will contain a property for “Loan Start Date”. No changes are done for existing Loan Application Form documents, though. Take your time to review this with ACCE.

9.3.2 Adding of Loan Update Form Document Class

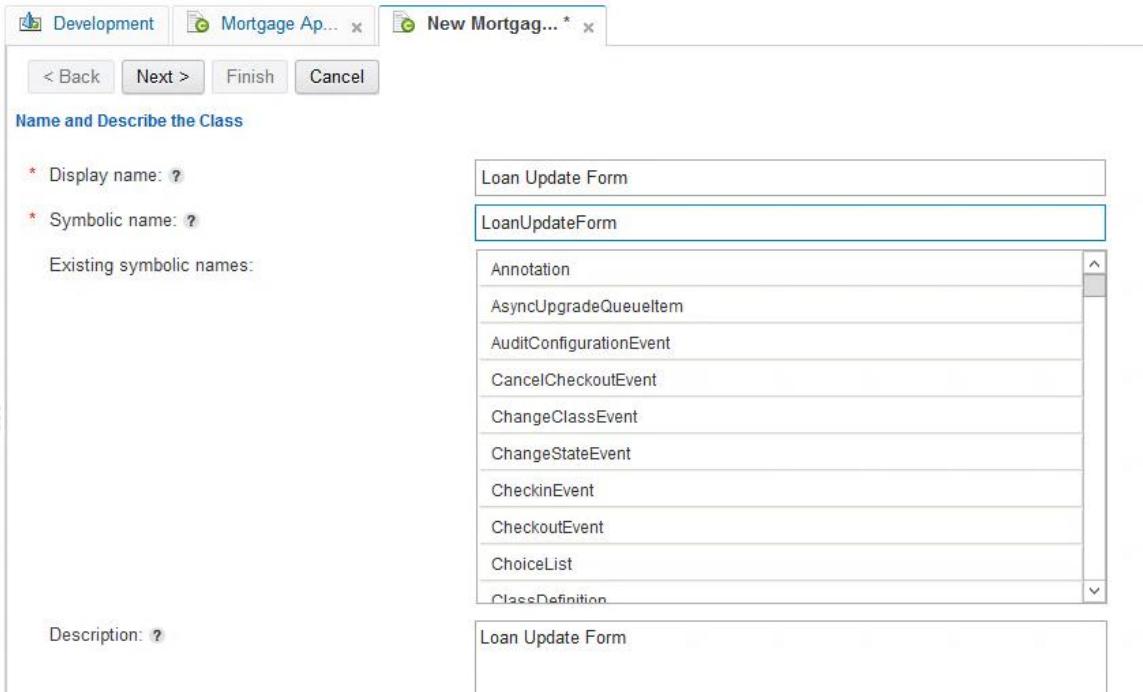
To complete this exercise, execute the following steps:

- 1) If Content Platform Engine Administrative Console is not yet open, log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the object store "Development" by clicking "JAM_2018 > Object Stores > Development" in the left panel.
- 3) In the navigation pane on the left, navigate to the “Mortgage Application Attachment” class. You find it in “Data Design > Classes > Document > Mortgage Application Attachment”. Click on it to display its properties. From the “Actions” dropdown menu, choose the “New Class” action to create a subclass of

the Document class “Mortgage Application Attachment”.



- 4) On the “New Mortgage Application Attachment Subclass” wizard, provide the display name “Loan Update Form”, then press “Next”, “Finish” and “Open”



- 5) On the “Loan Update Form” class properties, choose the “Property Definitions” tab. Select to view the inherited properties and check that the “Customer Name” property already has been inherited. Press “Add” repeatedly to add the following properties to the document class:
- Property Address
 - Purchasing Price
 - Loan Start Date
 - Loan Amount

For each of the properties, select it in the “Add Properties”-window and press “OK”. Note that you can type in parts of the name in the “Filter” entry on top right corner of the “Add Property”-window. After the properties have been added

the property definitions should look as follows:

Property	Data Type	Is Name	Is Inherited	Is System	Table Name	Column Name
Retention Date	Date Time		True	True	DocVersion	u0000_retailloan_update_date
Thumbnails	Object		True	True		
Document Title	String	True	True		DocVersion	u1708_documenttitle
Component Binding Label	String		True		DocVersion	u2e28_componentbindinglabel
Extended Retention Required	Boolean		True		DocVersion	u4292_ma_extendedretentionre
Customer Name	String		True		DocVersion	u91b8_ma_customername
Property Address	String					...
Purchasing Price	Float					...
Loan Start Date	Date Time					...
Loan Amount	Float					...

- Press “Save” to persist the changes into the database. The window refreshes after saving and then looks as follows.

Property	Data Type	Is Name	Is Inherited	Is System	Table Name	Column Name
Property Address	String				DocVersion	ud0ef_ma_propertyaddress
Purchasing Price	Float				DocVersion	u1d44_ma_purchasingprice
Loan Start Date	Date Time				DocVersion	u8023_ma_loanstartdate
Loan Amount	Float				DocVersion	uc574_ma_loanamount

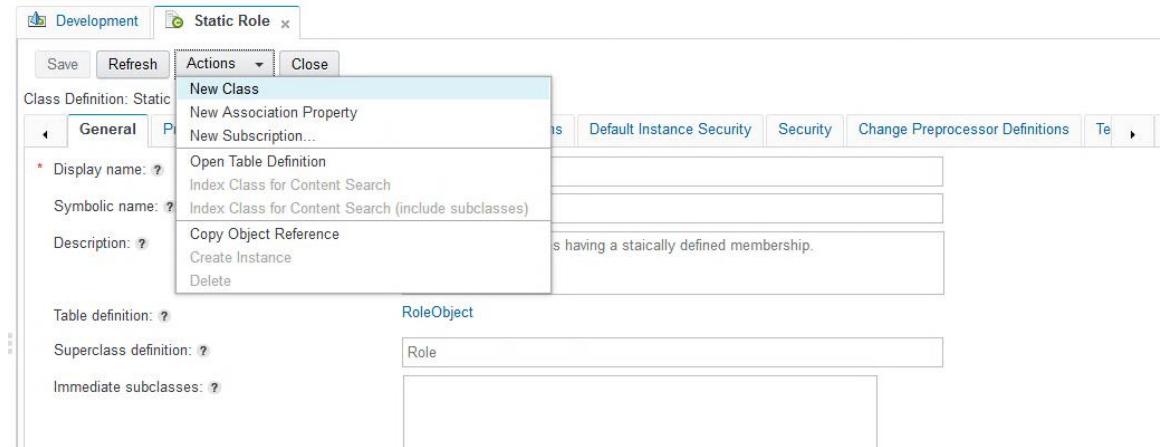
Note the column names were made unique on the database, by prefixing them with “uxxx_”, where “xxx” is some hexadecimal code. The code might be different on your environment. The rest of the name is derived from the symbolic name of the property templates.

9.3.3 Defining Reviewer Security Roles

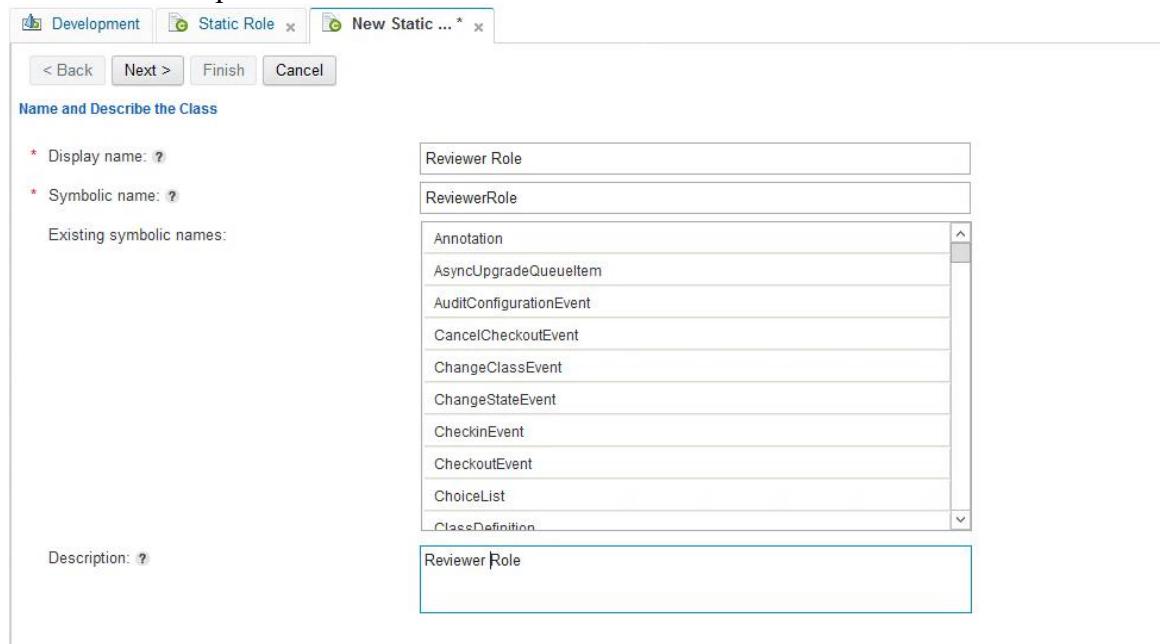
To complete this exercise, execute the following steps:

- Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- Open the object store "Development" by clicking "JAM_2018 > Object Stores > Development" in the left panel.

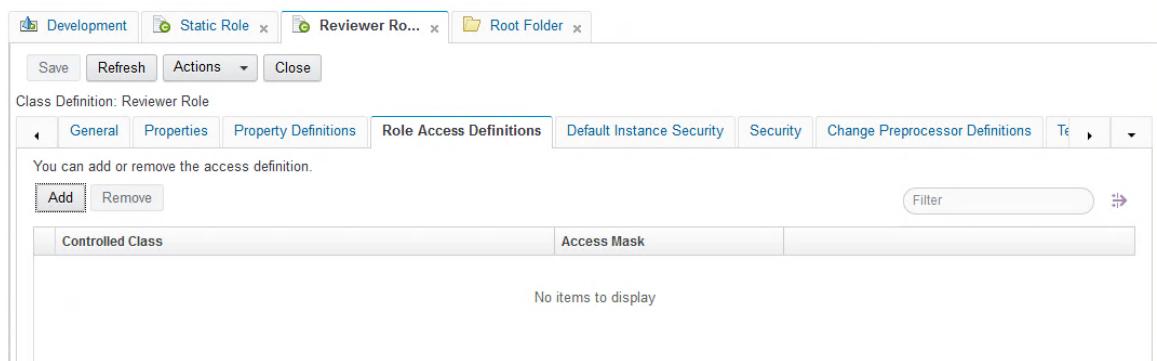
- 3) In the “Development” Object store, navigate to “Data Design > Classes > Other Classes > Role”. Click on “Static Role”. From the Actions Menu, choose “New Class” to define a subclass for the “Static Role” class.



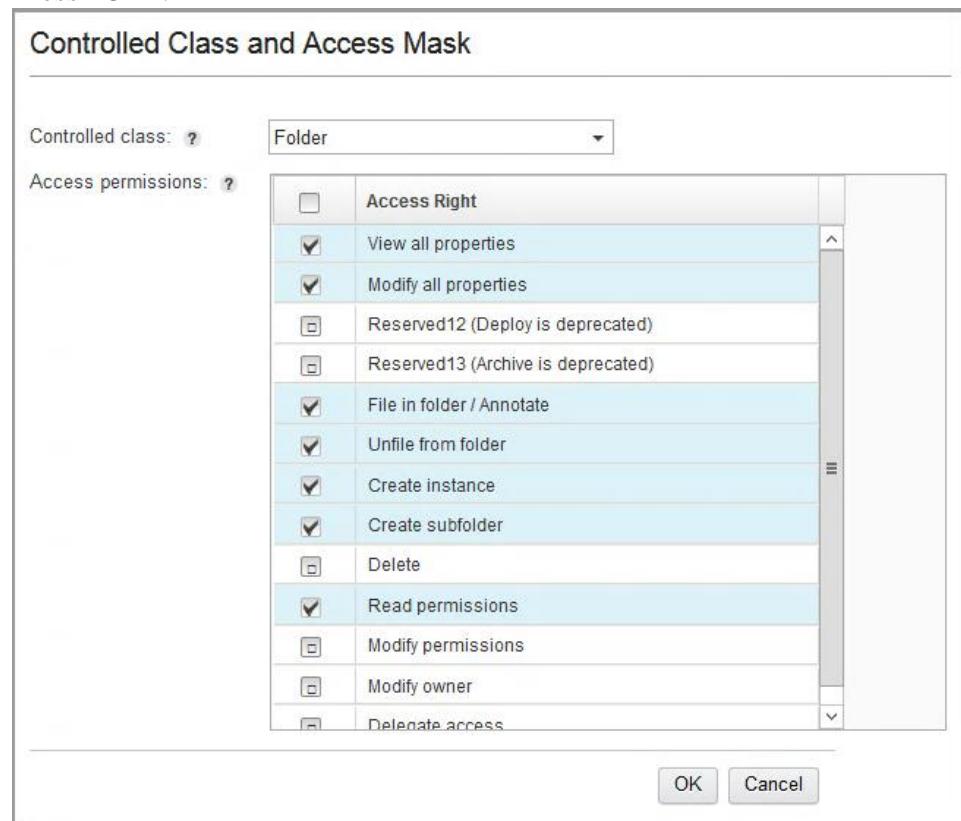
- 4) In the “New Static Role Subclass” window, provide the display name of the class “Reviewer Role” and accept default values for the other fields. Press “Next”, “Finish” and “Open”.



- 5) Select the “Role Access Definitions” tab on the Reviewer Role class. Press “Add”.



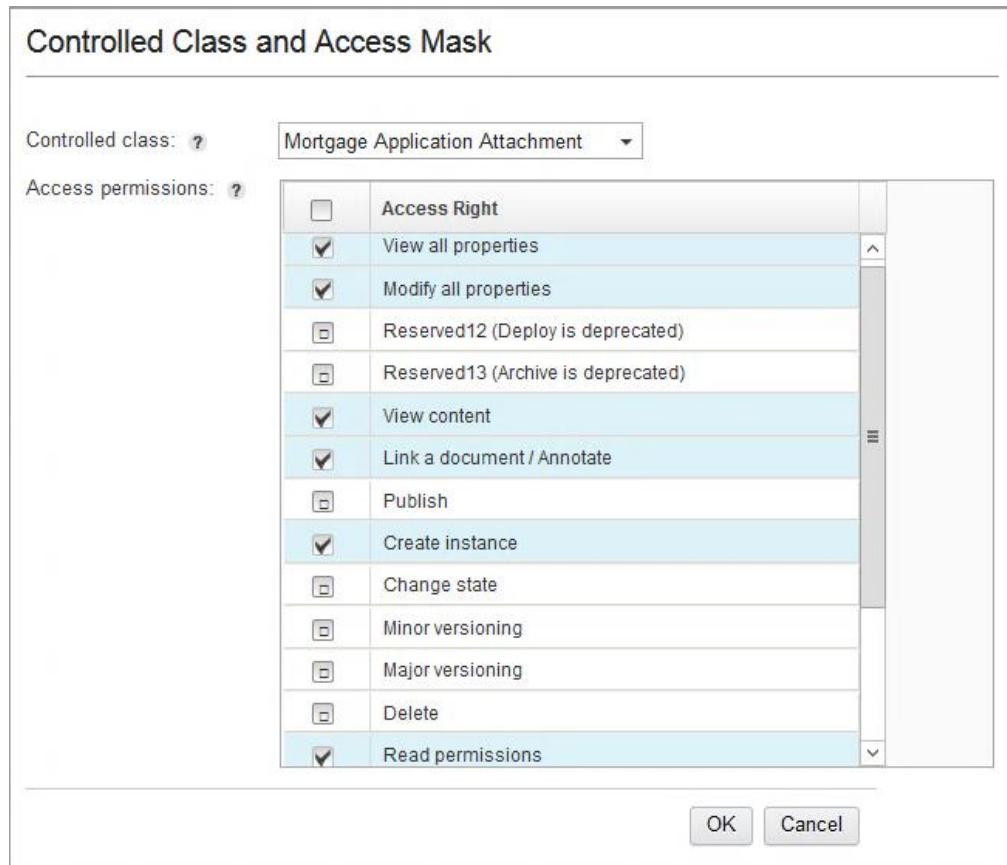
- 6) The “Controlled Class and Access Mask”-window opens. Under “Controlled Class” choose the “Folder” class, or type in its name using the keyboard. Then enable following access rights below:
- View all Properties
 - Modify all Properties
 - File in Folder / Annotate
 - Unfile from Folder
 - Create Instance
 - Create Subfolder
 - Read permissions
- Press “OK”.



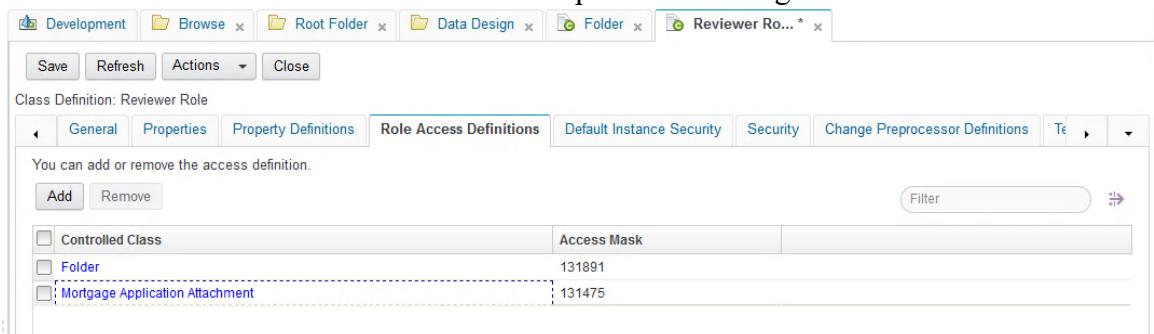
- 7) Select “Add” again on the “Access Role Definitions” tab of the Reviewer Role class. The “Controlled Class and Access Mask”-window opens. Under “Controlled Class” choose the “Mortgage Application Attachment” class. Then enable following access rights below:

- View all Properties
- Modify all Properties
- View Content
- Link a document / Annotate
- Create Instance
- Read permissions

Press “OK”.

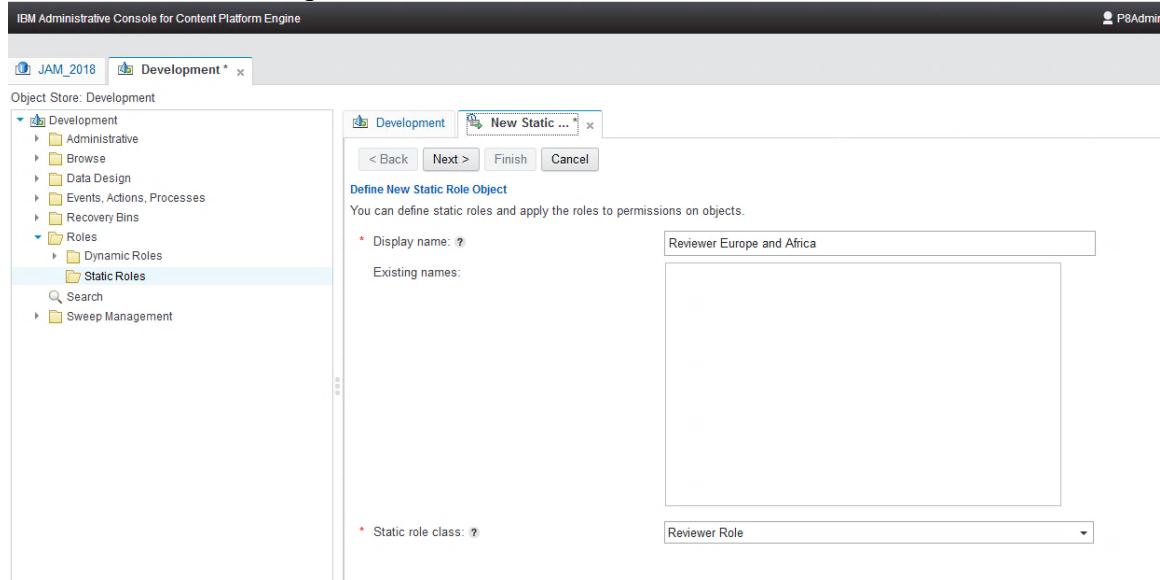


- 8) Select “Save” in the Reviewer Role Class to persist the changes.



- 9) In the Navigation Pane in ACCE on the left side, choose “Static Roles” under “Roles”. Press “New” to create a new Static Role. Set the Display name to

“Reviewer Europe and Africa”. For the Static role class, select the newly created “Reviewer Role”, then press “Next”:



- 10) On the “Setup Role Members” pane, select “Add Principal”. In the “Add Users and Groups”-dialog, search for the “testers” group. When you found it, move it to the right side under “Selected Users and Groups” and press “Ok”. Then press “Next” on the “New Static Role”-dialog.



- 11) Press “Finish” and “Close”.
- 12) Add two more Roles for “Reviewer US” and “Reviewer Asia”. Don’t add any users or groups to these roles (yet).

9.3.4 Defining Security Inheritance for Mortgage Application Attachment Documents

Current security settings for the Mortgage Application Attachment document class by default allow members of the Testers group full control for documents of the Mortgage Application Attachment documents class. This is changed in the first few steps. Secondly, some test folders will be created, where for one the security settings will be configured to include the Reviewer Europe and Africa role. The security setting will be configured to be inheritable to any documents contained in it. After that, some test documents will be created, with one configured to inherit the security settings.

To complete this exercise, execute the following steps:

- 1) If Content Platform Engine Administrative Console is not yet open, log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the object store "Development" by clicking "JAM_2018 > Object Stores > Development" in the left panel.
- 3) In the Object Store "Development" navigate to "Data Design > Classes > Document". Click on the "Mortgage Application Attachment" class to bring up its property window on the right side.
- 4) In the "Mortgage Application Attachment" class, choose the "Default Instance Security". These are the default security settings for documents created with this class. Select the box before the "testers" group and press "Remove" to remove the testers group from the default instance security of the "Mortgage Application Attachment" document class. Press "Save" on the class to persist the change.

Class Definition: Mortgage Application Attachment

General Properties Property Definitions Default Instance Security Security Policy Security Retention Change Preprocessor Definitions

You can allow or deny permissions to a user or group. Each permission group contains one or more access rights.

Predefined permissions are collections of access rights that grant varying degrees of access to the object. When you select a predefined permission group, the access rights that are included in the permission group are selected. You can customize a predefined permission as needed. [Learn more...](#)

Access Permissions

Add User/Group Permission...	Add Role Permission...	Edit...	Remove	2 total	Filter
Name	Source	Permission Type	Permission Group	Apply To	D
P8Admins	Direct	Allow	Full Control	This object only	
#CREATOR-OWNER	Direct	Allow	Full Control	This object only	

- 5) Please notice that the change of the default instance security is not automatically propagated to the child classes. Repeat the change on the subclasses "Loan Application Form", "Loan Update Form" and "Payslip". Take care to apply the change on the "Default Instance Security" tab, it is not needed on the "Security" tab.
- 6) In the navigation pane of the "Development" object store, navigate to "Data Design > Classes" and click on the "Folder" class to bring up its properties. Choose the "Default Instance Security" tab.
- 7) Select the "testers" group and press "Remove" to remove the Access Control Entry for the "testers" group. Press "Save" on the Folder class.

You can allow or deny permissions to a user or group. Each permission group contains one or more access rights.

Predefined permissions are collections of access rights that grant varying degrees of access to the object. When you select a predefined permission group, the access rights included in the permission group are selected. You can customize a predefined permission as needed. [Learn more...](#)

Access Permissions

Add User/Group Permission...	Add Role Permission...	Edit...	Remove	2 total	Filter
<input type="checkbox"/>	Name	Source	Permission Type	Permission Group	Apply To
<input type="checkbox"/>	P8Admins	Direct	Allow	Full Control	This object only
<input type="checkbox"/>	#CREATOR-OWNER	Direct	Allow	Full Control	This object only

The security allowing review of the Mortgage Application Attachments of a (Case) Folder will be assigned to specific folders only, for this reason the default instance security will not contain already the Reviewer Role. Instead, in the following we will create two test folders, one for access from the reviewers, and one without.

- 8) Within the navigation pane of the “Development” Object Store, navigate to “Browse” and click on “Root folder”. Create two folders with the names “Folder for review”, and “Folder without review”. For each one invoke “New Folder” from the Actions Menu, provide the folder name, and leave everything else on default values. For each of the folders, press “Finish” and “Open” at the end of the “New Folder”-wizard.
- 9) For both new folders, review the “Security” tab. Observe that no Access Control Entry exists for the “testers” group.

You can allow or deny permissions to a user or group. Each permission group contains one or more access rights.

Predefined permissions are collections of access rights that grant varying degrees of access to the object. When you select a predefined permission group, the access rights that are included in the permission group are selected. You can customize a predefined permission as needed. [Learn more...](#)

Access Permissions

Add User/Group Permission...	Add Role Permission...	Edit...	Remove	2 total	Filter	
<input type="checkbox"/>	Name	Source	Permission Type	Permission Group	Apply To	Delegated By
<input type="checkbox"/>	P8Admins	Default	Allow	Full Control	This object only	
<input type="checkbox"/>	P8Admin	Default	Allow	Full Control	This object only	

- 10) On the “Folder for review” folder, press “Add Role Permission” on the “Security” tab. The “Add Role Permissions”-dialog opens. Search for roles matching “Review”, then check “Reviewer for Europe and Africa” role.
- 11) Near the bottom of the dialog, select “This object and all children” for the “Apply to”-field. This setting marks the Access Control Entry to be inheritable by every object, especially each document, which has the “Security parent” property set to

this folder¹. Press “OK”.

Add Role Permission

Specify the permissions that you want to assign to each role.

Search Role

Search in object store: **Current ObjectStore** **Choose Other Object Stores**

Search for: Static Role Dynamic Role

Maximum results returned: **500**

Sort order: **None**

Display name: **Starts with** **Review** **Search**

Role:

		Display Name	Object Store
<input type="checkbox"/>		Reviewer Asia	Development
<input checked="" type="checkbox"/>		Reviewer Europe and Africa	Development
<input type="checkbox"/>		Reviewer US	Development

Select Inheritable Depth

Apply to:

This object and all children

12) Press “Save” on the “Folder for review” folder, to persist the changes.

Name	Source	Permission Type	Permission Group	Apply To
Reviewer Europe and Africa	Direct	ReviewerRole		This object and all children
P8Admins	Direct	Allow	Full Control	This object only
P8Admin	Direct	Allow	Full Control	This object only

13) On the folder “Folder for review”, add a document of class “Loan Application Form”. Name the documents “John Does Loan Application”. Take one of the screenshots from the desktop as the content, and provide “John Doe” as the now

¹ Actually it's a bit more complex. The object reference, that needs to be provided for the Security Parent property is of class type Dynamic Referential Containment Relationship. According to the specification it is a relationship object which dynamically selects a version from a series based on a property value. This enables a folder to contain always the latest version of a document.

required customer name. When finished, open the document object to show its Property dialog.

- Provide document name and select class “Loan Application Form”, Press “Next”.

Document title: John Doe Loan Application
Class: Loan Application Form
With content:

- Add document content by pressing on “Add” button and select a document file from the desktop. Press “Next”.

Sequence	Type	File Name	URL	MIME Type
1	Content Transfer	AppSrv01.PNG	-	image/png

- Provide “John Doe” as Customer Name, Press “Next”.

Property Name	Property Value	Data Type	Cardinality	Settable
Customer Name	John Doe	8 <String>	0 <Single>	0 <Read+e
Component Binding Label		8 <String>	0 <Single>	0 <Read+e
Extended Retention Required	<None> (not set)	2 <Boolean>	0 <Single>	0 <Read+e
Date of Birth		3 <Date>	0 <Single>	0 <Read+e
Loan Amount		4 <Double>	0 <Single>	0 <Read+e
Property Address		8 <String>	0 <Single>	0 <Read+e
Purchasing Price		4 <Double>	0 <Single>	0 <Read+e
Loan Start Date		3 <Date>	0 <Single>	0 <Read+e

- Leave Default values, press “Next”.

Save as reservation
 Create minor version
 Create as compound document

- Leave Default values, press “Next”.

Retention date:
 Default retention period
 None
 Indefinite
 Expiration: 9/24/2018 14:39:18
 Permanent

- Leave Default values, press “Next”.

Storage area: Default Database Storage Policy
Storage policy: Default Database Storage Policy
Security policy: Default Database Security Policy
Lifecycle policy: Default Database Lifecycle Policy
Replication group: Default Database Replication Group

g. Press “Finish”.

Name	Value
Document title	John Does Loan Application
Class	Loan Application Form
With content	True
Save as reservation	False
Create minor version	False
Create as compound document	False
Retention date	None
Storage policy	Default Database Storage Policy
Content elements	AppSrv01.PNG
MIME type	image/png
Classify document	false
Customer Name	John Doe

h. Press “Open”.

Success

Start time: September 24, 2018 at 2:39:46 PM Coordinated Universal Time

End time: September 24, 2018 at 2:39:47 PM Coordinated Universal Time

Elapsed time: 1 seconds

Created "John Does Loan Application"

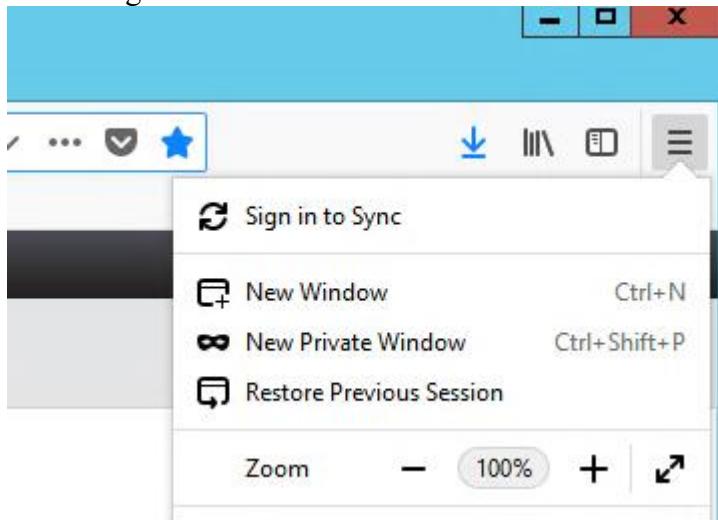
- 14) On the “John Does Loan Application”, review the “Security” tab. Verify that it is not showing any inherited security yet.

Document: John Does Loan Application, Version: 1.0, Status: Released

Access Permissions

Add User/Group Permission...	Add Role Permission...	Edit...	Remove	2 total	Filter	
<input type="checkbox"/>	<input type="checkbox"/>	Name	Source	Permission Type	Permission Group	Apply To
<input type="checkbox"/>		P8Admins	Default	Allow	Full Control	This object only
<input type="checkbox"/>		P8Admin	Default	Allow	Full Control	This object only

- 15) In the Firefox browser, open a new private window, for logging in to ACCE a 2nd time using the “tester” user.



- 16) In the private window, browse to ACCE and login as “tester”, password “Think4me”. URL is <http://vm-1.example.com:9080/acce/>.
- 17) In the private window, open the “Development” object store as well, and select “Root” from the “Browse” entry in the folder. Review that the “Folder for review” is visible, but the document is not yet visible.

- 18) Close the private window again, and go to the other ACCE window, where user p8admin is logged on. On the “John Does Loan Application” document, choose the “Properties” tab.
- 13) Navigate to a property named “Containers”. Select the arrow downwards in the Property value column, and click on the entry shown as “John Does Loan

Application”.

Property Name	Property Value	Data Type	Cardinality	Settability
Owner	uid=P8Admin,cn=users,dc=ibm,dc=com	8 <String>	0 <Single>	0 <Read>
Permissions	Permissions	7 <Object>	2 <List>	0 <Read>
Active Markings	<No items found>	7 <Object>	2 <List>	3 <Read>
Containers	Containers	7 <Object>	1 <Enum>	3 <Read>
Annotations	John Does Loan Application	7 <Object>	1 <Enum>	3 <Read>
Lock Token		5 <GUID>	0 <Single>	3 <Read>
Lock Timeout		6 <Integer>	0 <Single>	3 <Read>
Lock Owner		8 <String>	0 <Single>	3 <Read>
Security Policy		7 <Object>	0 <Single>	0 <Read>

- 14) A window with the “Dynamic Referential Containment Relationship” object for this document opens. Note it has only a “Properties” tab and the “Tail” property refers back to the folder where it is contained. From the Actions menu, select “Copy Object Reference”. Then close this tab.

Property Name	Property Value	Data Type	Cardinality	Settability
Tail	Folder for review	7 <Object>	0 <Single>	0 <Read>
Class Description	Dynamic Referential Containment Relationship	7 <Object>	0 <Single>	3 <Read>
This	John Does Loan Application	7 <Object>	0 <Single>	3 <Read>

- 15) Back in “John Does Loan Application” document properties, navigate to a property named “Security Parent”. Choose the arrow downwards on the column

next to the “Property Value” column and select “Paste Object”

Property Name	Property Value	Data Type	Cardinality	Settability
Annotations	Annotations	7 <Object>	1 <Enum>	3 <Read>
Lock Token		5 <GUID>	0 <Single>	3 <Read>
Lock Timeout		6 <Integer>	0 <Single>	3 <Read>
Lock Owner		8 <String>	0 <Single>	3 <Read>
Security Policy		7 <Object>	0 <Single>	0 <Read>
Coordinated Tasks	Coordinated Tasks	7 <Object>	1 <Enum>	3 <Read>
Folders Filed In	Folders Filed In	7 <Object>	1 <Enum>	3 <Read>
Security Parent		7 <Object>	0 <Single>	0 <Read>
Security Folder		Paste Object	0 <Single>	0 <Read>
Is Reserved	False	2 <Boolean>	0 <Single>	3 <Read>

- 16) Press “Save” on the “John Does Loan Application” document to persist the changes. Note the updated value also for the “Security Folder” property, after saving:

Property Name	Property Value	Data Type	Cardinality	Settability
Lock Owner		8 <String>	0 <Single>	3 <Read>
Security Policy		7 <Object>	0 <Single>	0 <Read>
Coordinated Tasks	Coordinated Tasks	7 <Object>	1 <Enum>	3 <Read>
Folders Filed In	Folders Filed In	7 <Object>	1 <Enum>	3 <Read>
Security Parent	John Does Loan Application	7 <Object>	0 <Single>	0 <Read>
Security Folder	Folder for review	7 <Object>	0 <Single>	0 <Read>
Is Reserved	False	2 <Boolean>	0 <Single>	3 <Read>
Is Current Version	True	2 <Boolean>	0 <Single>	3 <Read>

- 17) Navigate to the “Security” tab, and verify that the inheritance of the reviewer role is now shown:

The screenshot shows the 'Security' tab selected in the navigation bar. Below it, a message states: "You can allow or deny permissions to a user or group. Each permission group contains one or more access rights." A note below that says: "Predefined permissions are collections of access rights that grant varying degrees of access to the object. When you select a predefined permission group, the access rights that are included in the permission group are selected. You can customize a predefined permission as needed. Learn more..."

Add User/Group Permission...	Add Role Permission...	Edit...	Remove	3 total	Filter
<input type="checkbox"/>	Name	Source	Permission Type	Permission Group	Apply To
<input type="checkbox"/>	Reviewer Europe and Africa	Inherited	ReviewerRole		This object and all children
<input type="checkbox"/>	P8Admins	Default	Allow	Full Control	This object only
<input type="checkbox"/>	P8Admin	Default	Allow	Full Control	This object only

- 18) Restore the private Firefox window, and re-login if required. Navigate to the folder “Folder for review” again. In case you did not need to log in again, press “Refresh” to refresh the user interface. Check that now the document can be seen.

The screenshot shows the 'Contents' tab selected in the navigation bar for the 'Folder for review'. The table displays the following information:

Containment Name	Document Name	Date Created	Created By	Class	Major Version Number	Minor Version Number
John Does Loan Application	John Does Loan Application	September 24, 2018 at 2:39:46 PM Coordinated Universal Time	P8Admin	Loan Application Form	1	0

- 19) Open the document, go to the “Properties” tab, and update the Loan Amount to 1000000. Save the modification.

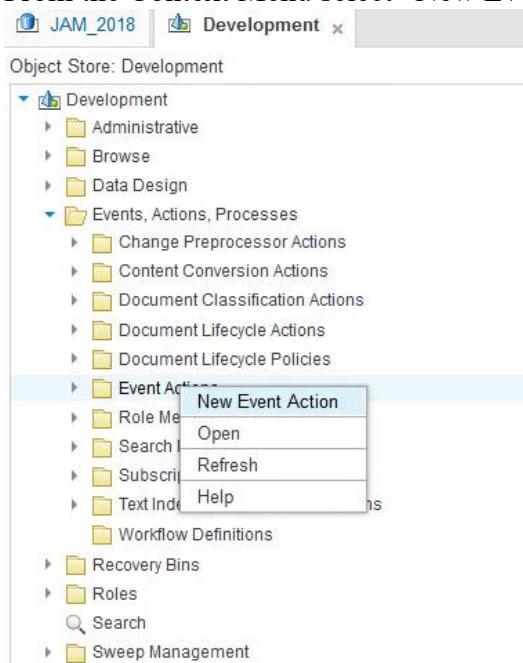
9.3.5 Automating Security Inheritance

The setting of the Security Parent property is not meant to be done manually. To automate it, an Event Subscription for the Create event of the “Dynamic Referential Containment Relationship” class will be configured. Each time an object of class “Dynamic Referential Containment Relationship” is created, a document is filed into a folder, not necessarily the first time, though, as a document can be filed in more than one folder. The event subscription code, which you can see on page 166, is written in such a manner that any document will inherit security from its first folder it gets filed into.

To complete this exercise, execute the following steps:

- 1) If Firefox is not yet open, please open it, and click on the link “DBA Demos and Labs – Material”, URL <https://ibm.ent.box.com/folder/53519546579?sortColumn=name&sortDirection=ASC> in the toolbar. Navigate to the material for the ECM sub-scenario and download the file “ApplySecurityInheritance.jar”.

- 2) If Content Platform Engine Administrative Console is not yet open, log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 3) Open the object store "Development" by clicking "JAM_2018 > Object Stores > Development" in the left panel.
- 4) Navigate to "Events, Actions, Processes" and right-click on "Event Actions". From the Context Menu select "New Event Action".



- 5) Supply “Apply Security Inheritance” for the Display name and Click “Next”.

The screenshot shows the 'Name and Describe the Event Action' wizard. The 'Display name:' field contains 'Apply Security Inheritance'. The 'Description:' field also contains 'Apply Security Inheritance'. The 'Existing names:' section is empty.

- 6) Leave the Type of the Event Subscription on “Class” and provide the Java class handler “ibm.DBADemosAndLabs.ECMss.ApplySecurityInheritance” and enable “Configure code module” option. The name is combined from the java package name and the class name. Press “Next”.

Specify the Type of Event Action

If you create a custom workflow event action, you must also add the code necessary to launch a workflow.

Status:	<input checked="" type="checkbox"/> Enabled ?
Event action type:	<input type="checkbox"/> Workflow ?
Type:	<input type="radio"/> JavaScript ? <input checked="" type="radio"/> Class ?
* Java class handler:	ibm.DBADemosAndLabs.ECMss.ApplySecurityInheritance
<input checked="" type="checkbox"/> Configure code module ?	

- 7) On this page you configure the code module. For its name you can provide the same name as the java class handler, “ibm.DBADemosAndLabs.ECMss.ApplySecurityInheritance”. Then select “Browse” and browse for the “ApplySecurityInheritance.jar”, which you have downloaded in step 1. Press Next.

Specify the Code Module

Specify a new or existing code module.

* Code module title: ?	ibm.DBADemosAndLabs.ECMss.ApplySecurityInheritance	Load Existing	Reset								
* Content elements: ?											
<table border="1"> <thead> <tr> <th></th> <th>Name</th> <th>Type</th> <th></th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>ApplySecurityInheritance.jar</td> <td>application/java-archive</td> <td><input type="button" value="Browse"/> <input type="button" value="Remove"/></td> </tr> </tbody> </table>					Name	Type		<input type="checkbox"/>	ApplySecurityInheritance.jar	application/java-archive	<input type="button" value="Browse"/> <input type="button" value="Remove"/>
	Name	Type									
<input type="checkbox"/>	ApplySecurityInheritance.jar	application/java-archive	<input type="button" value="Browse"/> <input type="button" value="Remove"/>								

- 8) The summary page appears. Press “Finish”, and then “Close”

Name	Value
Display name	Apply Security Inheritance
Description	Apply Security Inheritance
Enabled	True
Workflow	False
Type	Class
Java class handler	ibm.DBADemosAndLabs.ECMss.ApplySecurityInheritance
Configure code module	True
Code module title	ibm.DBADemosAndLabs.ECMss.ApplySecurityInheritance
Content elements	ApplySecurityInheritance.jar

- 9) On Navigation pane of the “Development” Object store, navigate to “Data Design > Classes > Other Classes > Referential Containment Relationship” and click on “Dynamic Referential Containment Relationship” to bring up its property window. Select the “Subscriptions” tab. From the Actions menu, select “New Subscription”

10) Provide the display name “Apply Security Inheritance”. Press “Next”

The screenshot shows the 'Name and Describe the Subscription' step of a wizard. At the top, there are tabs for 'Development', 'Dynamic Ref...', and 'New Subscri...'. Below the tabs are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. A sub-header 'Name and Describe the Subscription' is followed by a note: 'To associate an event with an event action (a programmatic response), create a subscription for an object or a class. [Learn more...](#)'. There are two input fields: 'Display name:' containing 'Apply Security Inheritance' and 'Existing names:' which is empty. Below these is a large text area for 'Description:' containing 'Apply Security Inheritance'.

11) Leave “Applies to all objects of this class” selected and press “Next”

The screenshot shows the 'Specify the Subscription Behavior' step of the wizard. At the top, there are tabs for 'Development', 'Dynamic Ref...', and 'New Subscri...'. Below the tabs are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. A sub-header 'Specify the Subscription Behavior' is followed by the note: 'You can specify the scope and behavior of this subscription.' There are three radio buttons under 'Scope':

- Applies to all objects of this class
- Applies to this instance of this class or the metadata for this class ?
- Applies to any version of this document version series

Below these are three groups of options:

- Workflow subscription option: Create a workflow subscription ?
- Thumbnail generation option: Generate thumbnails ?
- Video transcription option: Create a video transcription ?

- 12) On the “Select the Trigger” page select the “Create” event, press “Next”.

The screenshot shows a software interface for selecting triggers. At the top, there are tabs for 'Development', 'Dynamic Ref...', and 'New Subscri...'. Below the tabs are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. The main area is titled 'Select the Triggers' with the sub-instruction 'Select the system or custom events that will trigger the actions that are defined in the associated event action script or COM object.' A list titled 'Triggers:' contains ten items, each with a checkbox. The 'Creation Event' checkbox is checked and has a dashed border around it, indicating it is selected.

	Event Name
<input type="checkbox"/>	Creation Event
<input type="checkbox"/>	Deletion Event
<input type="checkbox"/>	Lock Event
<input type="checkbox"/>	Mark For Deletion Event
<input type="checkbox"/>	Move Content Event
<input type="checkbox"/>	Recover Event
<input type="checkbox"/>	Unlock Event
<input type="checkbox"/>	Update Event
<input type="checkbox"/>	Update Security Event

- 13) On the next page, select the “Apply Security Inheritance” event action. It has been preselected as it’s the only event action on the Development Object Store, yet. Press “Next”

The screenshot shows a software interface for selecting an event action. At the top, there are tabs for 'Development', 'Dynamic Ref...', and 'New Subscri...'. Below the tabs are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. The main area is titled 'Select an Event Action' with the sub-instruction 'Select the event action that defines the actions to be taken when the subscription is triggered.' A dropdown menu labeled 'Select an event action: ?' shows 'Apply Security Inheritance' as the selected option. There is also a 'New...' button next to the dropdown.

- 14) Leave the defaults on the next page, press “Next”, “Finish” and “Close”

The screenshot shows a software interface for specifying additional options. At the top, there are tabs for 'Development', 'Dynamic Ref...', and 'New Subscri...'. Below the tabs are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. The main area is titled 'Specify Additional Options' with the sub-instruction 'Configure options for the event action and the associated event action handler.' Several configuration options are listed with checkboxes:

- Initial state: Enable this subscription
- Subclass option: Include subclasses
- Subscription run mode: Run synchronously
- Filter expression:
- Filter property name:

- 15) Now create a new Payslip document in the folder “Folder for Review”. If you are unsure on the steps, refer to step 13) of section 9.3.4 on page 154, and replace the folder class “Loan Application Form” with “Payslip”
 16) Select the “Security” tab and verify, that the “Reviewer Europe and Africa” role security was already inherited from the Folder.

```

package ibm.DBADemosAndLabs.ECMss;

import java.util.Iterator;
import com.filenet.api.engine.EventHandler;
import com.filenet.api.events.*;
import com.filenet.api.property.*;
import com.filenet.api.util.Id;
import com.filenet.api.core.*;
import com.filenet.api.collection.FolderSet;
import com.filenet.api.constants.*;

public class ApplySecurityInheritance implements EventHandler {
    public void onEvent(ObjectChangeEvent event, Id subId) {
        try {
            // As a best practice, fetch the persisted source object
            // of the event, filtered on the two required properties.
            ObjectStore os = event.getObjectStore();
            Id id = event.get_SourceObjectId();

            PropertyFilter rcr_pf = new PropertyFilter();
            rcr_pf.addIncludeProperty(
                new FilterElement(null, null, null, "Head", null));

            DynamicReferentialContainmentRelationship rcr =
                Factory.DynamicReferentialContainmentRelationship
                    .fetchInstance(os, id, rcr_pf);
            Properties rcr_prop = rcr.getProperties();

            Document doc = (Document)rcr_prop.getObjectValue("Head");
            PropertyFilter pf_doc = new PropertyFilter();
            pf_doc.addIncludeProperty(
                new FilterElement(null, null, null,
                    "SecurityFolder FoldersFiledIn", null));
            doc.fetchProperties(rcr_pf);
            Properties doc_prop = doc.getProperties();

            FolderSet doc_folders = doc.get_FoldersFiledIn();
            Iterator doc_folders_iter = doc_folders.iterator();

            if (doc_folders_iter.hasNext()) {
                Folder f = (Folder)doc_folders_iter.next();
                doc_prop.putObjectValue("SecurityFolder", f);
                doc.save(RefreshMode.NO_REFRESH);
            }
        } catch (Exception e) {
            throw new RuntimeException(e);
        }
    }
}

```

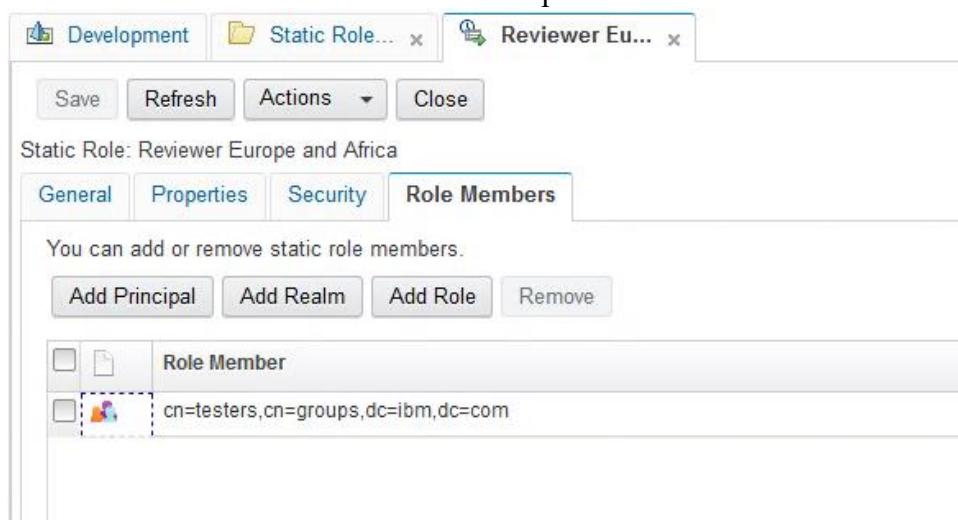
Figure 1: Java Sourcecode of ApplySecurityInheritance.jar

In the java code displayed above, the event subscription uses the “Head” property of the Dynamic Referential Containment Relationship object to locate the document. Then it uses the “FoldersFiledIn” property of the document to get the first folder, and set it to the “SecurityFolder” property of the document. Upon saving the change, this creates the security inheritance.

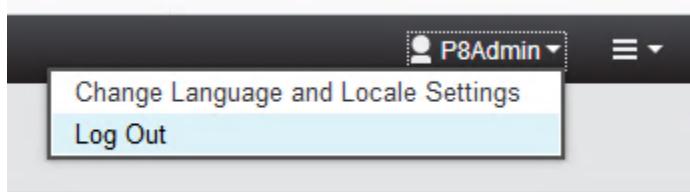
9.4 Prototyping Enhancements – Verification Instructions

Most of the enhancements were already verified as part of section 9.3.4. There is one thing that can still be tried, revoking security from the tester user, by removing him from the reviewer role:

- 1) Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) Open the object store "Development" by clicking "JAM_2018 > Object Stores > Development" in the left panel.
- 3) In the navigation pane of the "Development" object store, navigate to "Roles > Static Role" and click on "Reviewer Europe and Africa".



- 4) Check the box before the "testers" group and click on "Remove". When you get an error message that Roles cannot be left empty, add "p8admin" to the role, by clicking on "Add Principal". Press "Save" to persist the changes.
- 5) Log off from ACCE, and re-login as "tester", password "Think4me".



- 6) Open the object store "Development" by clicking "JAM_2018 > Object Stores > Development" in the left panel.

- 7) Click on “Root Folder” on “Browse” in the “Development” Object Store. Check that no access is granted for the “Folder for review” anymore.

9.5 Prototyping Enhancements – Summary

In this exercise you have enhanced the Mortgage Application Attachment document classes, by defining a new property and a new document class. Furthermore, you have refined security for the Mortgage Application Attachments, by specifying the security using roles, and by using security inheritance.

10 Exercise (Optional): Troubleshooting a Search

Please note that this exercise is also not required to complete the other sub-scenarios, it is optional.

Duration is approx. 30 minutes.

10.1 Troubleshooting a Search – Introduction

The runtime side of a search against the Content Platform Engine is determined by many factors, and sometimes, for understanding and increasing performance, additional insight is required. In this exercise you will enable tracing on the Content Platform Engine level, determine the runtime characteristics of a search, including the time consumed by the database, and the database SQL query which is generated for the search.

More details for reviewing, rewriting and accelerating queries for Content Platform Engine can be found in the documentation in the section “Tuning IBM FileNet P8 queries”

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.5.0/com.ibm.p8.performance.doc/p8ppt263.htm, or in the technical document “Indexing for IBM FileNet P8 Content Engine Searches” <http://www-01.ibm.com/support/docview.wss?uid=swg21502886>.

10.2 Troubleshooting a Search – High-Level Steps

- Log-on to Content Platform Engine Administrative Console (ACCE)
- Enable Traces for the subsystems “Database, Error, Search, and Security.
- Log in to the Mortgage Application Desktop from Exercise 7
- Search for Mortgage Application Attachment those “Customer name” begins with “Customer”
- Review the trace files and find the data from the search
- Using the Thread ID, try to identify the Content Engine Search expression, which Navigator has sent to Content Engine
- Using the Thread ID, try to identify the Database SQL Search expression, which Content Engine has sent to DB2
- Identify the information regarding the execution time of the query
- Back in ACCE, create an Index for the Customer name, and the Document Title. Note the column names can be looked up in the Property Definitions of the “Mortgage Application Attachment” document class.
- Run the query again and determine, if the query can be executed faster with this index.

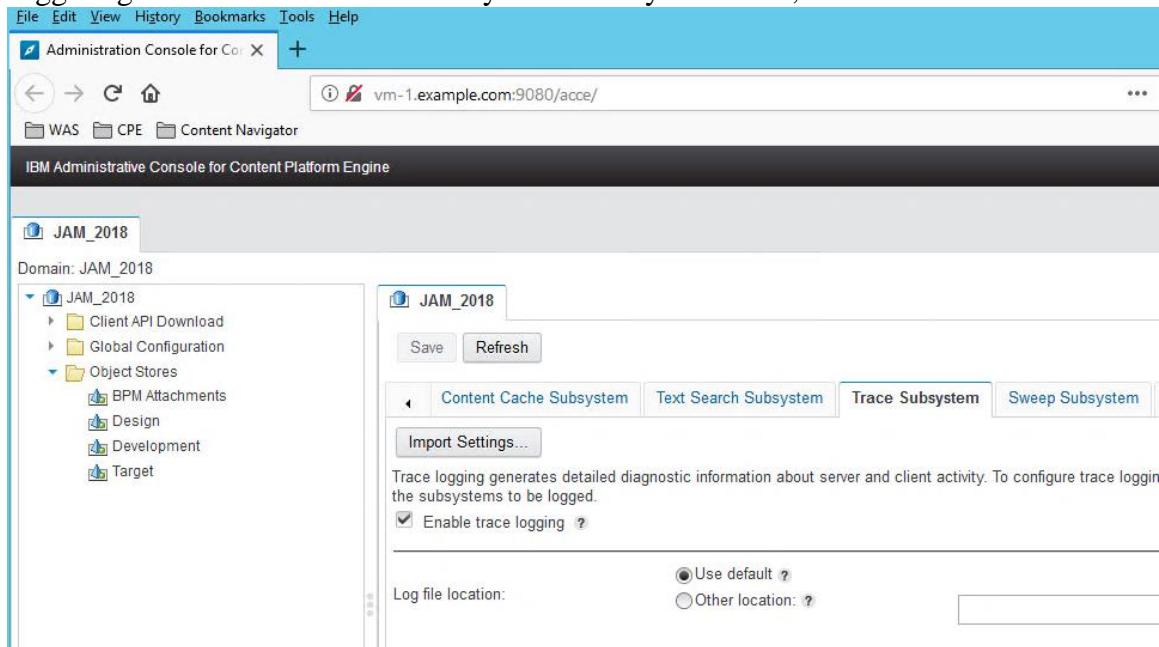
10.3 Troubleshooting a Search – Step by Step Instructions

In this exercise you will access the following tools / resources

Tool	Location / URL
Content Platform Engine Administrative Console (ACCE)	http://vm-1.example.com:9080/acce
Mortgage Application Desktop created in Exercise 7	http://vm-1.example.com:9081/navigator/?desktop=MA

To complete this exercise, execute the following steps:

- 1) Log in to Content Platform Engine Administrative Console (<http://vm-1.example.com:9080/acce>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 2) In the “JAM_2018” Domain properties, navigate to the “Trace subsystem” tab. If the content of the tab does not get displayed, click once in the empty area for triggering a refresh. If the Trace subsystem is not yet enabled, enable it.



- 3) Enable the following trace subsystems: Database (All Details), Error (All details), Search (All Details), Security (All Details).

The screenshot shows two separate windows of the JAM_2018 Trace Subsystem configuration interface.

Top Window (Initial Trace Flags):

- Log file location:** Radio buttons for "Use default" (selected) and "Other location".
- Subsystems:** A table listing trace flags with checkboxes for Detail, Moderate, Summary, and Timer.

Name	<input type="checkbox"/> Detail ?	<input type="checkbox"/> Moderate ?	<input type="checkbox"/> Summary ?	<input type="checkbox"/> Timer ?
Database Trace Flags	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Directory Trace Flags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EJB Trace Flags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engine Trace Flags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Trace Flags	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Events Trace Flags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Bottom Window (Additional Trace Flags):

- Log file location:** Radio buttons for "Use default" (selected) and "Other location".
- Subsystems:** A table listing trace flags with checkboxes for Detail, Moderate, Summary, and Timer.

Name	<input type="checkbox"/> Detail ?	<input type="checkbox"/> Moderate ?	<input type="checkbox"/> Summary ?	<input type="checkbox"/> Timer ?
Filesystem Trace Flags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replication Trace Flags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search Trace Flags	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Security Trace Flags	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Server Communication Trace Flags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SSI Trace Flags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 4) Click “Save”, leave ACCE window open.
- 5) Log in to Mortgage Application Desktop created in Exercise 7 (<http://vm-1.example.com:9081/navigator/?desktop=MA>). When prompted for user ID and password, use **P8Admin / Think4me**.
- 6) Choose the “Search” feature on the left side drop-down menu and create a new search. In the properties, select to search documents of class “Mortgage Application Attachment”, and those documents where the Customer name property starts with “Customer”. Please note some matching documents were

added during Exercise 7.

The screenshot shows the Administration Console for Content Navigator. The title bar has tabs for 'Administration Console for Content' and 'Mortgage Application Desktop'. The address bar shows the URL 'vm-1.example.com:9081/navigator/?desktop=MA'. The left sidebar has links for 'WAS', 'CPE', and 'Content Navigator'. The main area is titled 'Mortgage Application Desktop'. A search bar at the top says 'Search' with a dropdown arrow. Below it is a 'New Search' section with a dropdown menu for 'Search name contains' and options for 'Recent Searches' (including 'Search001') and 'All Searches'. To the right is a 'New Search' panel with 'Search Criteria' fields: 'Search in: \Target (Including subfolders)' and 'Class: Mortgage Application Attachment (Incl...)'. Below these are dropdowns for 'Customer Name' (set to 'Starts With'), 'Customer', and buttons for 'Add Property', 'Show All Properties', and 'Property options: Match all'.

- 7) Run the search by clicking “Search”.
- 8) Using Windows Explorer, navigate to the FileNet Content Platform Engine Log directory “C:\Program Files (x86)\ibm\WebSphere\AppServer\profiles\AppSrv01\FileNet\server1”.

The screenshot shows a Windows Explorer window with the path 'C:\Program Files (x86)\ibm\WebSphere\AppServer\profiles\AppSrv01\FileNet\server1'. The left pane shows 'Favorites' (Desktop, Downloads, Recent places) and 'This PC' (Desktop, Documents, Downloads, Music, Pictures, Videos). The right pane displays a list of files and folders:

Name	Date modified	Type	Size
content	6/18/2018 6:14 PM	File folder	
content-ctrs	6/25/2018 1:25 PM	File folder	
content-ids	6/25/2018 1:18 PM	File folder	
ConvTemp	6/18/2018 5:30 PM	File folder	
CSSTemp	6/18/2018 5:30 PM	File folder	
GCD	6/25/2018 3:32 PM	File folder	
INSO	6/18/2018 5:30 PM	File folder	
pedata	6/18/2018 5:30 PM	File folder	
p8_server_error.log	6/25/2018 1:25 PM	Text Document	1,674 KB
p8_server_trace.log	6/25/2018 1:26 PM	Text Document	1,664 KB
perlog_config.properties	6/18/2018 5:30 PM	PROPERTIES File	2 KB
pesvr_system.log	6/25/2018 1:26 PM	Text Document	116 KB
pesvr_trace.log	6/18/2018 5:30 PM	Text Document	0 KB

- 9) Right-click on “p8_server_trace.log and select “Edit with Notepad++”.
- 10) Try to find the search, which was run in step 7 above, for example by searching for the Symbolic Name of the document class: MortgageApplicationAttachment. This should bring you to a line like the following:

```

12479 2018-06-25T15:43:28.781 49C731AD SEC FNRC0000D - DEBUG SecurityContext : principalVal=P8Admin name=P8Admin
12480 2018-06-25T15:43:28.781 49C731AD SRCH FNRC0000D - DEBUG Search for: "SELECT t.[DocumentTitle], t.[ContentSize],
12481 t.[LastModifier], t.[DateLastModified], t.[MajorVersionNumber], t.[ClassDescription], t.[IsCurrentVersion],
12482 t.[IsReserved], t.[Reservation], t.[MimeType], t.[VersionStatus], t.[MinorVersionNumber], t.[VersionSeries], t.[Id],
12483 t.[ReplicationGroup], t.[Creator], t.[ReservationType], t.[IsVersioningEnabled], t.[Owner],
12484 t.[EntryTemplateObjectStoreName], t.[EntryTemplateId], t.[EntryTemplateLaunchedWorkflowNumber], t.[CompoundDocumentState]
12485 FROM [MortgageApplicationAttachment] t WHERE t.[MA_CustomerName] LIKE 'Customer%' AND t.VersionStatus = 1 ORDER BY
12486 t.[DocumentTitle] OPTIONS (TIMELIMIT 60, COUNT LIMIT 2147483647)" continue from: 'null'
12487 2018-06-25T15:43:28.781 49C731AD SEC FNRC0000D - DEBUG Read SD with zero count of protected-from ids
12488 2018-06-25T15:43:28.781 49C731AD SEC FNRC0000D - DEBUG _getSecurityToken domain=JAM_2018
12489 SID=S-1-97-2070447756-4030772337-4284074414-2976703662 found in UAT cache :
12490 2018-06-25T15:43:28.781 49C731AD SEC FNRC0000D - DEBUG Effective result count limit = 2000
12491 2018-06-25T15:43:28.781 49C731AD SEC FNRC0000D - DEBUG Executing SQL (0DF616F): "SELECT epoch_id, u1708_documenttitle,
12492 content_size, modify_user, modify_date, major_version_number, object_class_id, is_current, is_reserved, mime_type,
12493 version_status, minor_version_number, version_series_id, object_id, replication_group_id, creator, reservation_type,
12494 versioning_enabled, security_id, usce8_entrytemplatelinkedobjectstore, u9855_entrytemplatelaunchedwork,
12495 compound_document_state, security_folder_id, recovery_item_id FROM DBADMIN.DocVersion TO WHERE ((TO.object_class_id IN
12496 (?, ?, ?)) AND TO.home_id IS NULL AND ( (u91b8_ma_customername LIKE ? AND version_status = ?))) ORDER BY
12497 u1708_documenttitle ASC, object_id ASC FETCH FIRST 400 ROWS ONLY OPTIMIZE FOR 400 ROWS" In-bindings:
12498 ((1040DF63-0000-C611-AA8D-11DE1F4C453),(9040DF63-0000-C611-A954-7E9034A5FC2E),(2041DF63-0000-CE18-9121-FC3B6C89017C),'Custo
12499 mer%',)
12500 2018-06-25T15:43:28.781 49C731AD DB FNRC0000D - DEBUG Executed SQL (0DF616F) in 4.675 milliseconds
12501 2018-06-25T15:43:28.781 49C731AD SEC FNRC0000D - DEBUG Read SD with zero count of protected-from ids
12502 2018-06-25T15:43:28.781 49C731AD SEC FNRC0000D - DEBUG <securitytracedetail>\n<securityrefs sdidentity="0xF50549E4"
12503 principalname="P8Admin"/>\n<securedobject id="#(BOA63664-0000-CC15-A4C3-9B41269DAD3E;">
12504 classid="#(9040DF63-0000-C611-A954-7E9034A5FC2E)" classname="LoanApplicationForm"
12505 objectstoid="#(C838FD8C-BD2C-4966-BF0F-149387DC51D8)"/>\n<accessallowed value="1343176191">\n
12506 <accessmaskdescription> READ WRITE MAJOR VERSION LINK UNLINK MINOR VERSION VIEW_CONTENT CREATE_INSTANCE
12507 CHANGE_STATE PUBLISH RESERVED12 RESERVED13 DELETE READ_ACL WRITE_ACL DELEGATE_ACCESS WRITE_OWNER PRIVILEGED_WRITE
12508 </accessmaskdescription>\n<accessallowed>\n<accessstoken principalname="P8Admin" size="5">\n<principal
12509 name="cn= testers, cn= groups, dc= ibm, dc= com" sid="S-1-97-2524513772-275859935-2572149936-2939768601"/>\n<principal
12510 name="cn= P8Admins, cn= groups, dc= ibm, dc= com" sid="S-1-97-2950640278-3175929776-3062577318-2372208003"/>\n<principal
12511 name="cn= REALM- USERS (TivoliDirectoryServer)" sid="S-1- 96- 613599021- 1189701729- 456560046- 2433792821"/>\n<principal
12512 name="uid= P8Admin, cn= users, dc= ibm, dc= com" sid="S-1- 97- 2070447756- 4030772337- 4284074414- 2976703662"/>\n<principal
12513 name=" # AUTHENTICATED- USERS " sid="S-1- 5- 11"/>\n<accessstoken> READ WRITE MAJOR VERSION LINK UNLINK MINOR VERSION
12514 VIEW_CONTENT CREATE_INSTANCE CHANGE_STATE PUBLISH RESERVED12 RESERVED13 DELETE READ_ACL WRITE_ACL
12515 DELEGATE_ACCESS WRITE_OWNER </accessmaskdescription>\n<effectiveaccess value="998911">\n<accessmaskdescription> READ WRITE MAJOR VERSION LINK UNLINK MINOR VERSION
12516 VIEW_CONTENT CREATE_INSTANCE CHANGE_STATE PUBLISH RESERVED12 RESERVED13 DELETE READ_ACL WRITE_ACL
12517 DELEGATE_ACCESS WRITE_OWNER </accessmaskdescription>\n<effectiveaccess>\n<owner

```

- 11) The green keyword in the line is the thread-ID. With it, next / previous output lines of the same thread can be identified. The line is coming from the Search subsystem (SRCH). By reviewing the line, it can be seen that Content Navigator by default sorts the output by the Document Title, as the following Content Engine Query was generated:

```

SELECT t.[DocumentTitle], t.[ContentSize], t.[LastModifier],
t.[DateLastModified], t.[MajorVersionNumber], t.[ClassDescription],
t.[IsCurrentVersion], t.[IsReserved], t.[Reservation], t.[MimeType],
t.[VersionStatus], t.[MinorVersionNumber], t.[VersionSeries], t.[Id],
t.[ReplicationGroup], t.[Creator], t.[ReservationType], t.[IsVersioningEnabled],
t.[Owner], t.[EntryTemplateObjectStoreName], t.[EntryTemplateId],
t.[EntryTemplateLaunchedWorkflowNumber], t.[CompoundDocumentState]
FROM [MortgageApplicationAttachment] t WHERE t.[MA_CustomerName]
LIKE 'Customer%' AND t.VersionStatus = 1 ORDER BY t.[DocumentTitle]
OPTIONS (TIMELIMIT 60, COUNT LIMIT 2147483647 )

```

- 12) One of the next lines with the same thread-ID is from the Database subsystem (DB). The query translated into SQL can be found in the line: "SELECT epoch_id, u1708_documenttitle, content_size, modify_user, modify_date, major_version_number, object_class_id, is_current, is_reserved, mime_type, version_status, minor_version_number, version_series_id, object_id, replication_group_id, creator, reservation_type, versioning_enabled, security_id,

```

u5ce8_entrytemplateobjectstore, u9855_entrytemplateid,
u5948_entrytemplatelaunchedwor, compound_document_state,
security_folder_id, recovery_item_id FROM DB2ADMIN.DocVersion T0
WHERE ((T0.object_class_id IN (?, ?, ?)) and T0.home_id IS NULL AND (( 
u91b8_ma_customername LIKE ? AND version_status = ?))) ORDER BY
u1708_documenttitle ASC, object_id ASC FETCH FIRST 400 ROWS ONLY
OPTIMIZE FOR 400 ROWS" In-bindings: ({1040DF63-0000-C61E-AA8D-
11DE1F4AC453}, {9040DF63-0000-C611-A954-7E9034A5FC2E},{2041DF63-
0000-CE18-9121-FC3B6C89017C},'Customer%',1)

```

One of the next lines for the DB subsystem with the same thread-ID should contain the execution time of the query, e.g.

49C731AD DB FNRCE0000D - DEBUG Executed SQL (0D8F616F) in 4.675 milliseconds

The dot is a decimal dot, not a thousand-separator.

- 13) One of the next lines should be a line from the security subsystem (SEC) with the access token for one of the objects, which were found by running the query. As a user should only see the documents, to which they have access to, FileNet needs to review the security of all found documents. The access token can best be viewed by copying into a document and replacing all “\n” strings with a linefeed. Notepad++ can do that.

The following can be seen in the access token:

- a. Information about the secured object itself
- b. Information about the allowed access to the secured object
- c. The access token itself, i.e. the user for which the token is for, and all groups the user is a member of
- d. The security descriptor, i.e. the security settings of the secured entity
- e. The applied markings, in case security from a Marking Set was applied
- f. Timing information on how long it required to check security.

- 14) Get back to ACCE and open the “Target” Object Store. Navigate to “Data Design > Table Definitions” and click on the “DocVersion” table.

15) Choose the “Indexes” tab and add the following new Index.

Add	Remove	Move Up	Move Down		
<input type="checkbox"/>	Column Name	Sort Order	Data Type	Size	Allows Null Values
<input type="checkbox"/>	u91b8_ma_customername	Ascending	String	40	True
<input type="checkbox"/>	u1708_documenttitle	Ascending	String	255	True

- 16) Run the query again and determine the new execution time. Find out, if the new index had a positive or negative effect on the execution time of the query.

10.4 Troubleshooting a Search – Verification Instructions

Nothing explicitly to verify. Before you finish with the exercise, we suggest to deactivate the traces again, as this might have a negative impact on the performance later on.

- 1) Open ACCE
- 2) In the domain properties, choose the Trace Subsystem tab.
- 3) Remove the ticks in the trace subsystems which were enabled. (Click on Summary and Timer to get everything disabled), click “Save”.
- 4) Disable the trace, click “Save” again.

10.5 Troubleshooting a Search – Summary

In this exercise you have:

- 1) Used Content Engine Tracing to review security and query execution behavior and timing.
- 2) Defined an Index to try to accelerate a Content Engine query.