IBM Cloud Pak for Business Automation Demos and Labs 2022

Lab Guide – Content Navigator on Cloud Pak for Business Automation

V 1.0

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1 Introduction

1.1 IBM Content Navigator

IBM Content Navigator (ICN) or Business Automation Navigator (BAN) in Cloud Pak for Business Automation (CP4BA) are called in both names and both refer to the same product with slightly different configurations. BAN provides users who work with Content from an Enterprise Content Repository and business applications with a web-based interface. Depending on the configuration of BAN home page (desktop), users can access business applications, dashboards, content features, custom plug-ins, and thus configure BAN for different use-cases / departments. The user interface is highly customizable and integrates searching, browsing, and checking documents in and out of the repository with Microsoft Office applications.

1.2 Lab Overview

This lab demonstrates how to use BAN from Cloud Pak for Business Automation. The use cases shown are generic, most applications might require one or more of the concepts demonstrated in the exercises.

> In this lab there are two types of exercises. The "Walkthrough" ones require admin access and cannot be done by the participants of a JAM environment but introduce the reader to important concepts.

Exercise (Walkthrough**) "How to configure Content Navigator web client**" covers important concepts which are part of BAN lab exercises like how to enable Desktop Features, Entry template Manager, edit services, Role based Redaction, Role based Desktop Administration, Viewer Mapping, Browse Content, Search, and Plug-ins etc.

Exercise "Creating Entry Templates for Managing Documents and Folders" demonstrates how to define Entry Templates, and how users can streamline their work and control how documents are managed in the repository by defining the location, class, property values etc.

Exercise "Adding and checking in documents using Entry Templates" shows how to add documents and check in documents into a repository using the entry template created in above exercise.

Exercise (Walkthrough**) "External Data Services (EDS)".** EDS helps to access external data whenever the business user invokes the service through the web client. Users can use EDS either with BAN or with Case Manager from Business Automation workflow. This exercise demonstrates one aspect of using EDS like how to validate properties while adding a document. EDS covers many more use cases, like dependent choice lists, disallowing modification of properties (read only properties) and many more.

Exercise "Search Content and Simple Search" illustrates how to search for content that is stored in repositories and multiple document classes. It demonstrates how the searches can be adapted to user needs, and also demonstrates that those searches can be saved into FileNet P8 repositories.

Exercise "Creating favorites" describes how to create favorites. Favorites allow users to quickly find items that they work with frequently.

Exercise "Redact content using IBM Daeja Viewer" explains how business users can hide parts of a document, e.g., to hide sensitive information for users without a need to know. The exercise also demonstrates how users can save a document with redactions and demonstrates the merge & split feature.

1.3 Lab Instructions

_1. If you are performing this lab as a part of an IBM event, access the document that lists the available systems and URLs along with login instructions. For this lab, you will need to access **IBM Content Navigator ICN desktop**. It would be recommended to store the URL as bookmark, so you can refer to it easier.

_2. Please download all the sample documents from the Lab Data folder. They will be used for Adding, Searching, Merge and Split documents exercises.

_3. Obtain a username for the labs, and the password. Note the password, you will require it multiple times.

> In the lab instructions there are sections outlined with a grey bar on the left side, like this one. In sections of this type, additional explanations, for example about concepts and additional features are given.

2 Exercise: How to configure IBM Content Navigator web client

2.1 Introduction

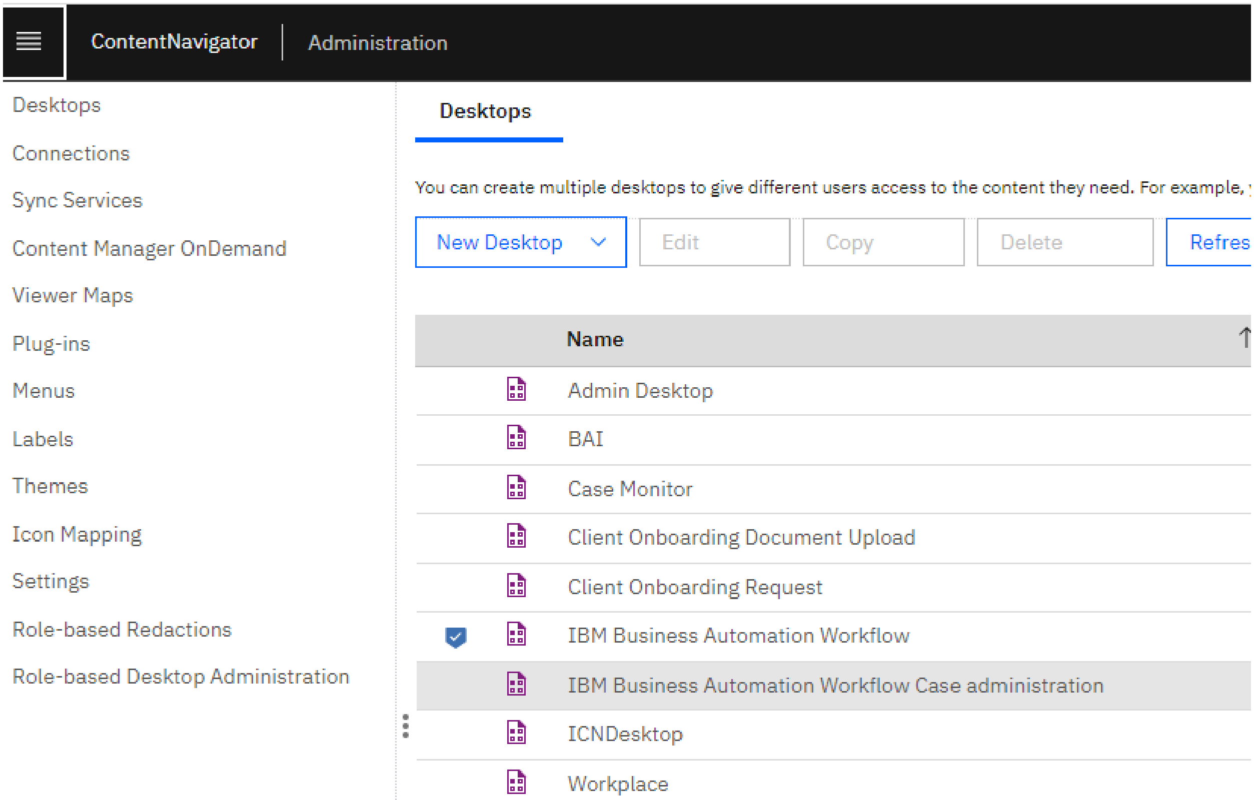
This informative exercise introduces the reader to some essential administration and configuration concepts and explains how to administer those configurations which are required for the content lab exercises in the below sub sections. If you access the lab as a JAM participant, required configuration has been done already and no admin execution steps are required.

At a minimum, an administrator must configure connections to the content management repositories to enable users to access content, define desktops and viewer mappings through web client.

> To access the administration tool: Enter a URL with the following format: http://host_name:port_number/context root/?desktop=admin.

2.2 Administration

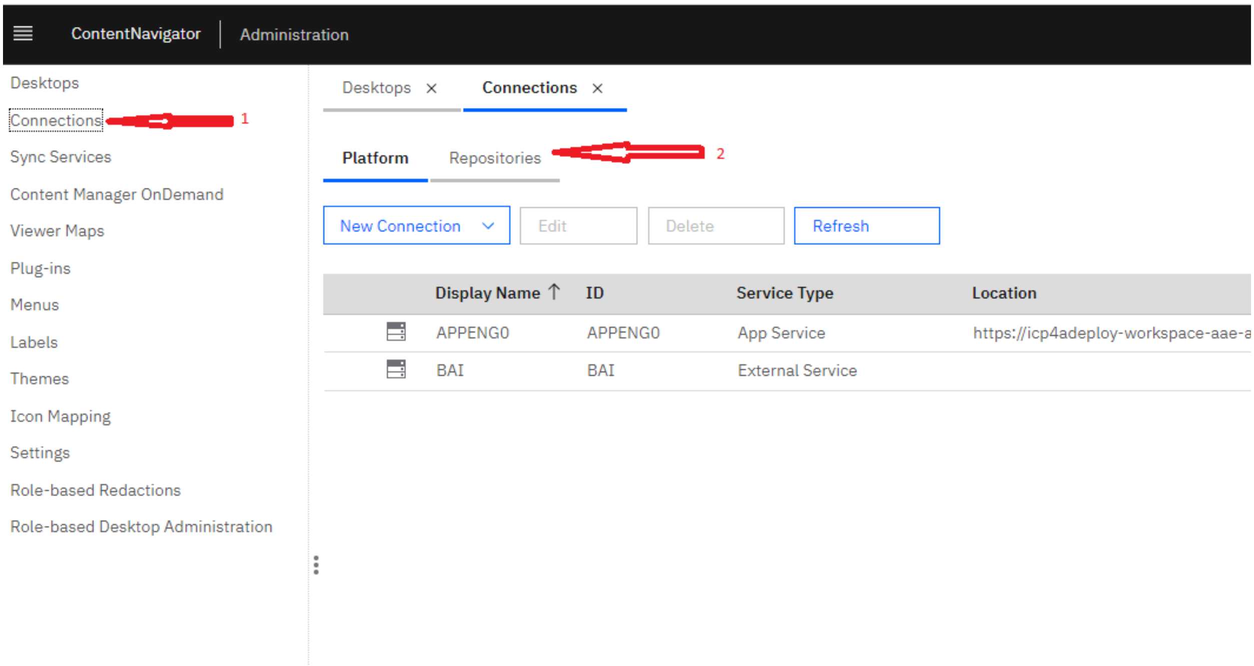
Administrators access IBM Content Navigator administration tool from the web client by logging in to the administration desktop. Once an administrator clicks on the Administration component from the left pane, ICN shows the following list of topics:



2.3 Connections (Repositories)

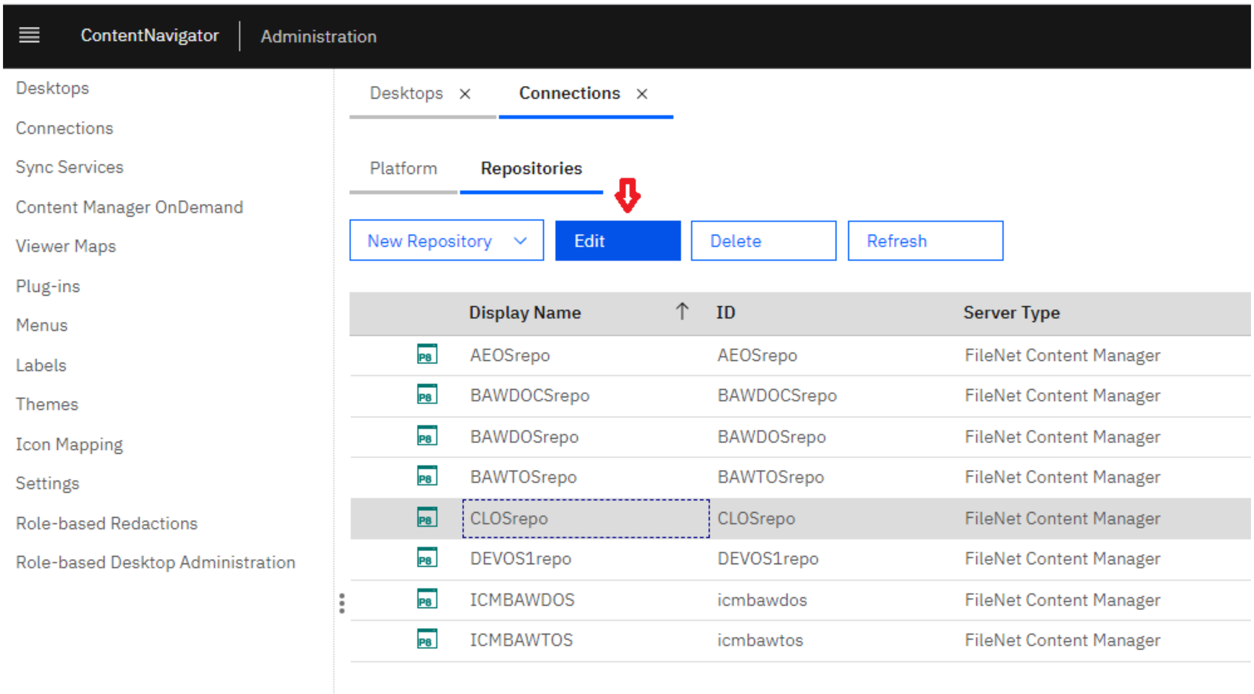
Below screenshot shows how to configure connections to repositories from the administration component. These connections enable users to access a repository from the desktops and for example browse the content.

_1. Click “Connections” on the lift side to bring up a list of connections.



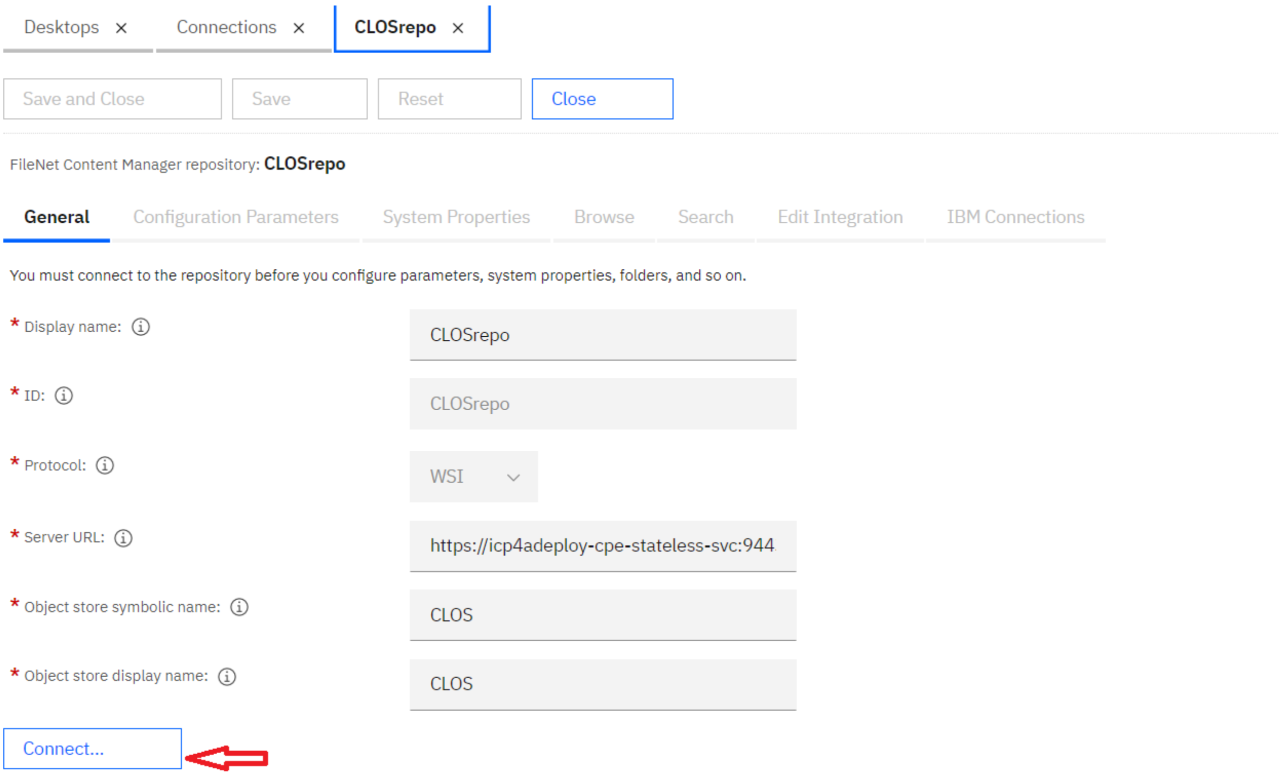
Hint: In a CP4BA environment, the Repository Configuration is done by the CP4BA Operator, if the initialization was enabled in the CP4BA Configuration. An administrator can configure additional repositories manually, below are the configuration steps

_2. Click the “Edit” button to edit a connection, or select from “New Repository”, and choose repository type to create a new one.

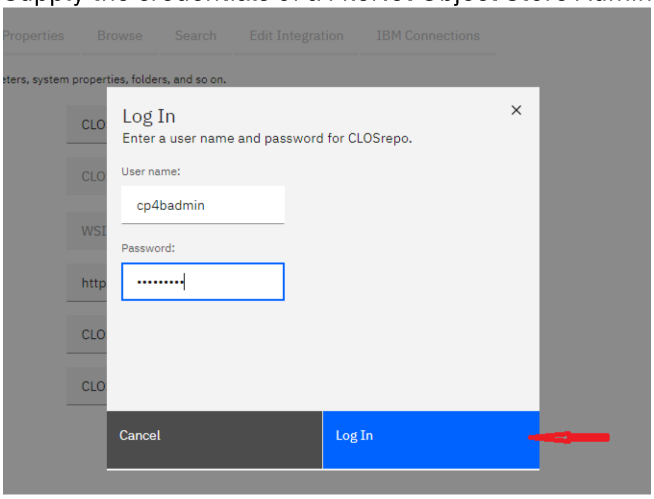


_3. The connection properties are shown. To enable the remaining tabs a connection to the repository is needed. Click on “Connect”.

> If a new Connection was created, it is needed to configure the Object store details, and the URL for the Content Engine WSI Interface. The latter can use the name of the FileNet Service in an OCP environment, which would be valid only inside the IBM Content Navigator pod, not in browser.

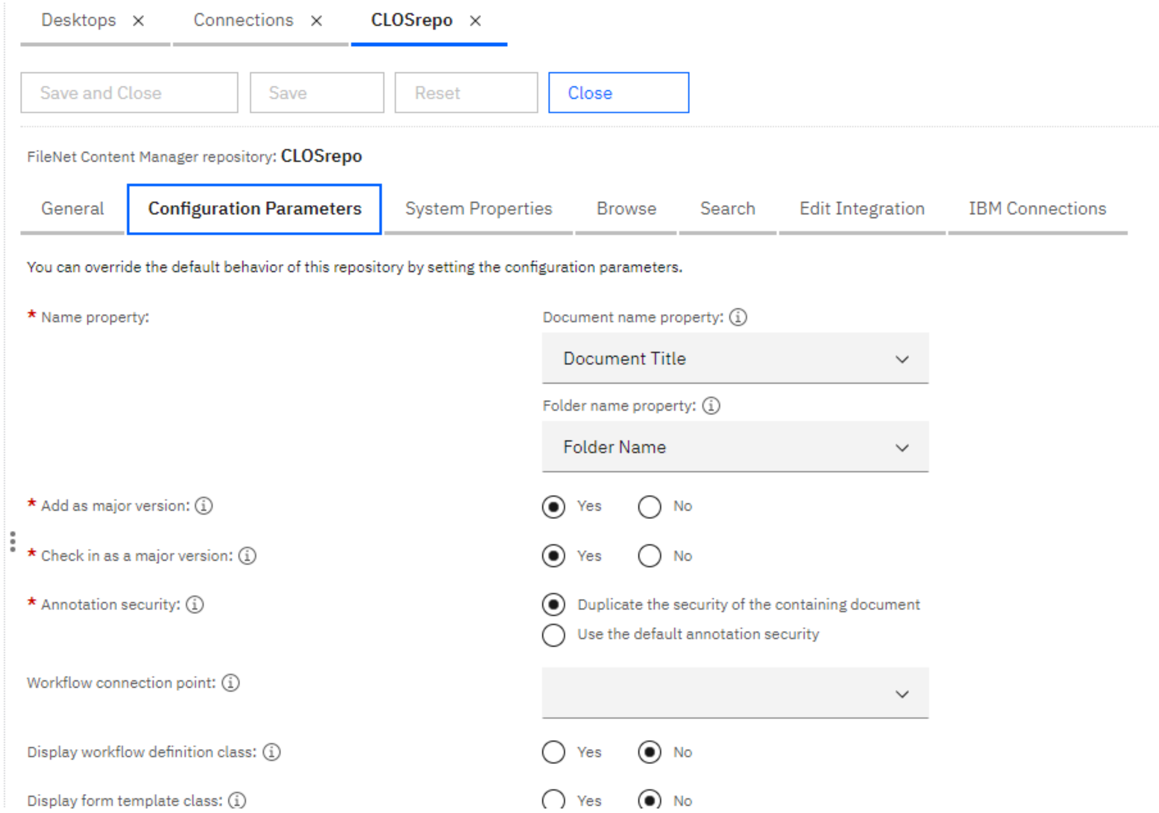


_4. The Repository Login popup is shown, in case of a FileNet Content Manager repository connection. Supply the credentials of a FileNet Object Store Administrator

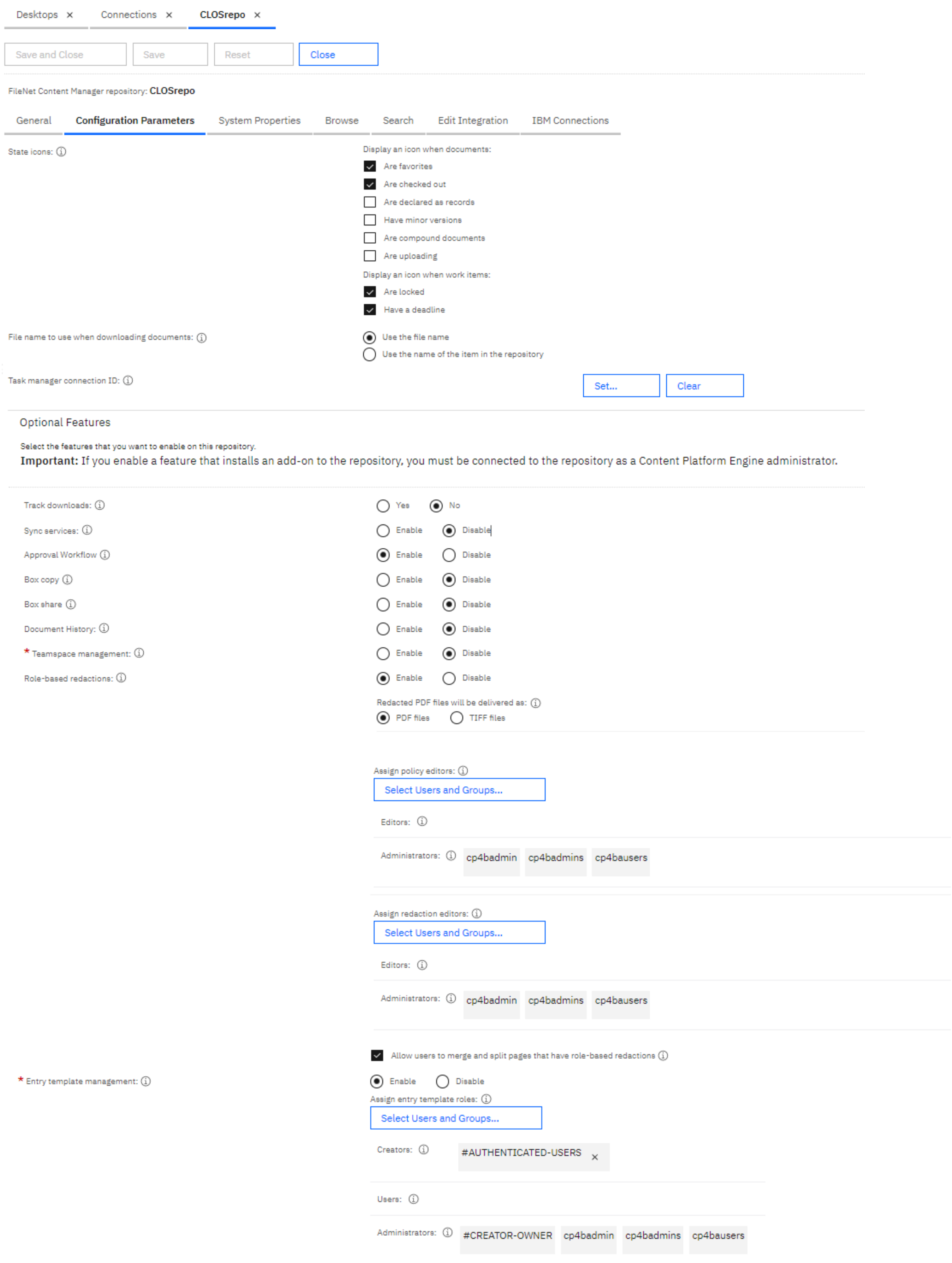


_5. Upon successful connection, the tabs on the right are shown. For a FileNet Repository this would be Configuration Parameters, System Properties, Browse, Search, and Edit integration etc., as shown in below screenshot. Go through the Configuration Parameters to see which options got selected on the CLOSrepo repository.

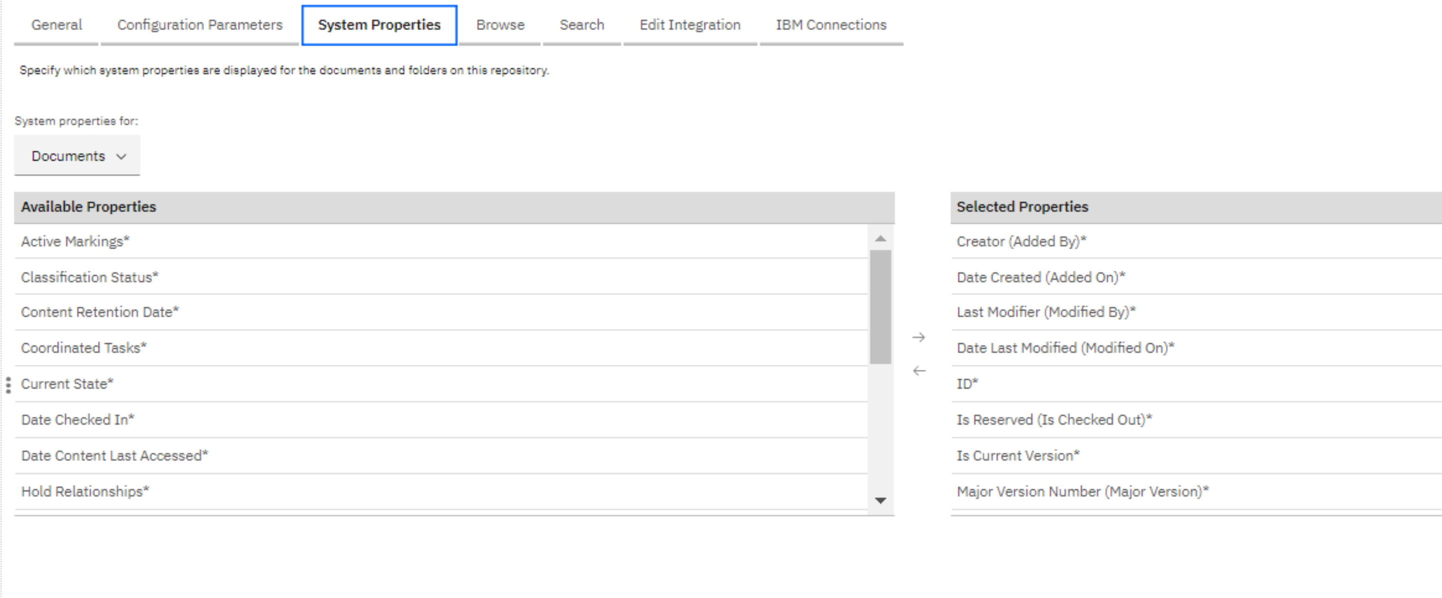
Note the Annotation security parameter got configured to “Duplicate the security of the containing document”.



Role based redactions and entry template management for content lab exercises was enabled. The security for users and groups on these options can also be configured, it is shown in the screenshot below next.

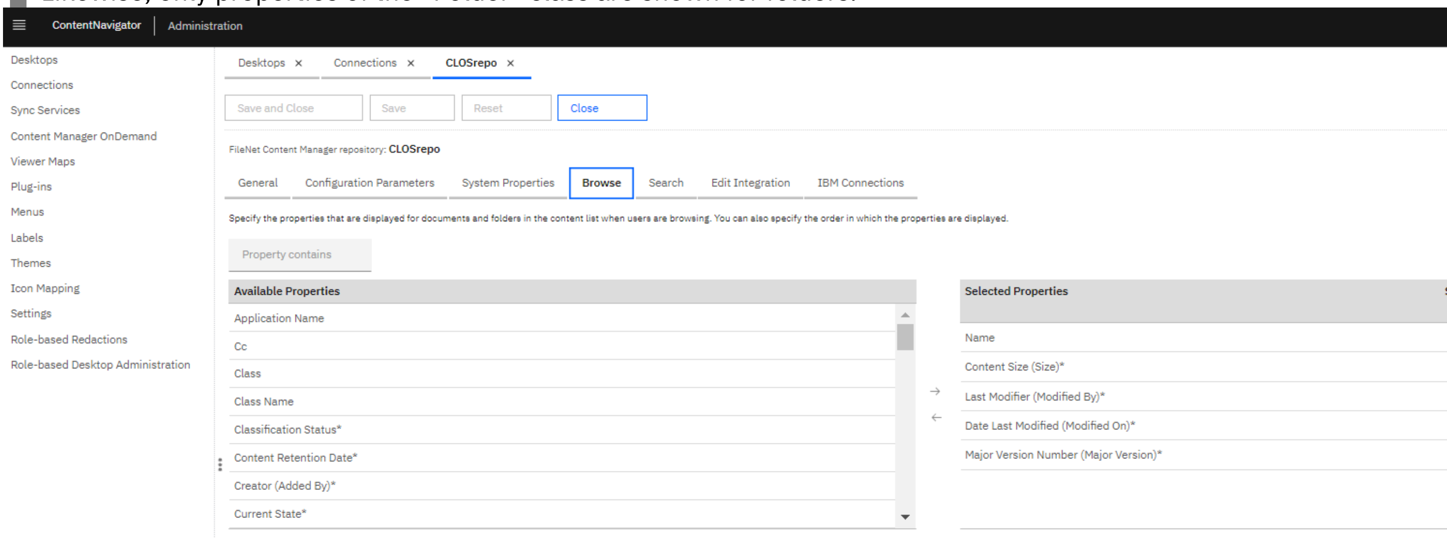

Desktops ×
Connections ×
CLOSrepo ×
Save and Close
Save
Reset
Close
FileNet Content Manager repository: CLOSrepo
General
Configuration Parameters
System Properties
Browse
Search
Edit Integration
IBM Connections
State icons:
Display an icon when documents:
Are favorites
Are checked out
Are declared as records
Have minor versions
Are compound documents
Are uploading
Display an icon when work items:
Are locked
Have a deadline
File name to use when downloading documents:
Use the file name
Use the name of the item in the repository
Task manager connection ID:
Set...
Clear
Optional Features
Select the features that you want to enable on this repository.
Important: If you enable a feature that installs an add-on to the repository, you must be connected to the repository as a Content Platform Engine administrator.
Track downloads:
Yes
No
Sync services:
Enable
Disable
Approval Workflow
Box copy
Box share
Document History:
* Teamspace management:
Role-based redactions:
Redacted PDF files will be delivered as:
PDF files
TIFF files
Assign policy editors:
Select Users and Groups...
Editors:
Administrators:
cp4badmin
cp4badmins
cp4bausers
Assign redaction editors:
Select Users and Groups...
Editors:
Administrators:
cp4badmin
cp4badmins
cp4bausers
Allow users to merge and split pages that have role-based redactions
* Entry template management:
Enable
Disable
Assign entry template roles:
Select Users and Groups...
Creators:
#AUTHENTICATED-USERS ×
Users:
Administrators:
#CREATOR-OWNER
cp4badmin
cp4badmins
cp4bausers

_6. The next tab allows to select which system properties to display for the documents and folders on this repository.



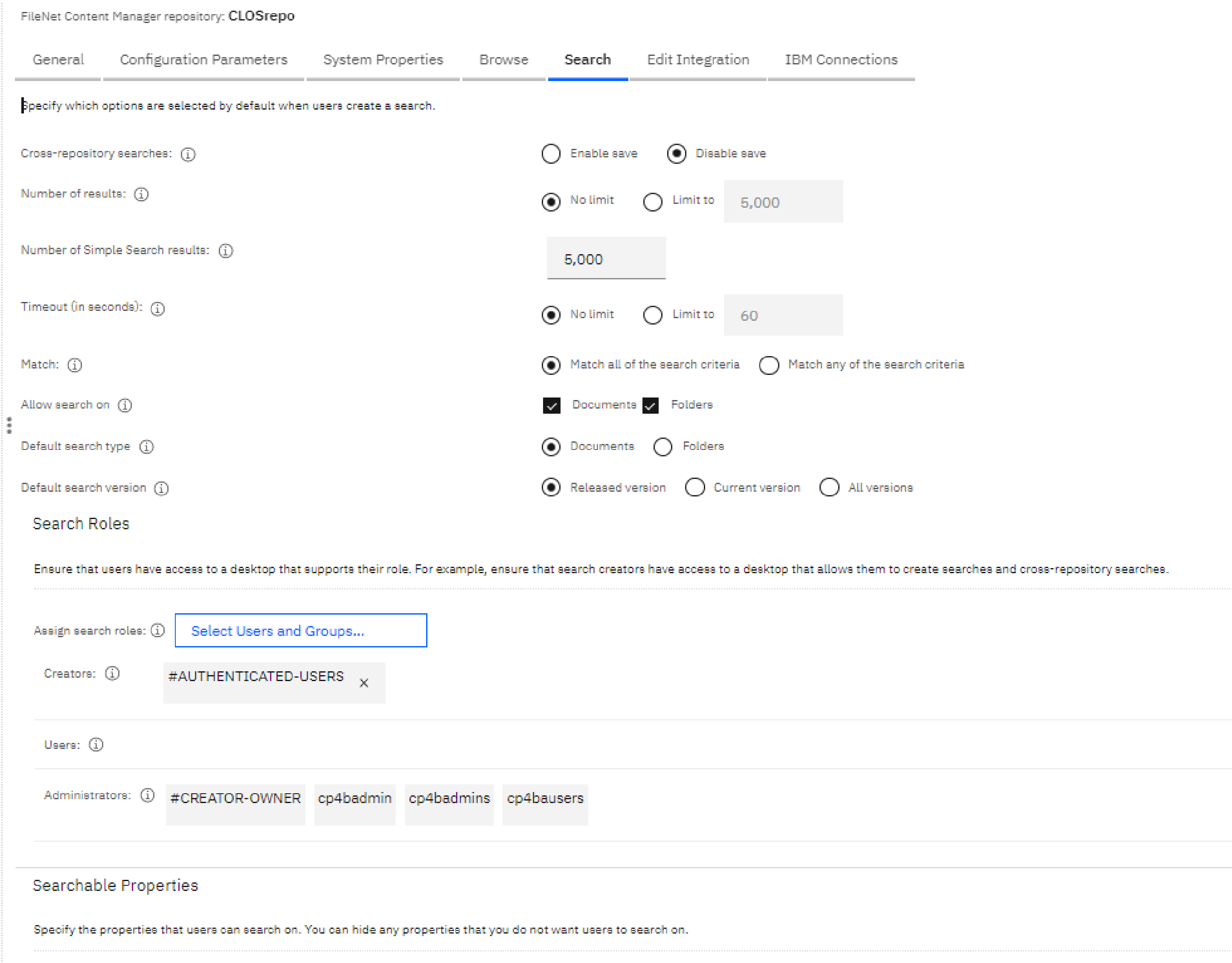
_7. On the Browse tab, properties of Folders and Documents can be selected to be displayed on the Browse View. Also their order can be specified.

> Note that only properties of the "Document" class are shown on the left side, for Document properities. Likewise, only properties of the "Folder" class are shown for folders.

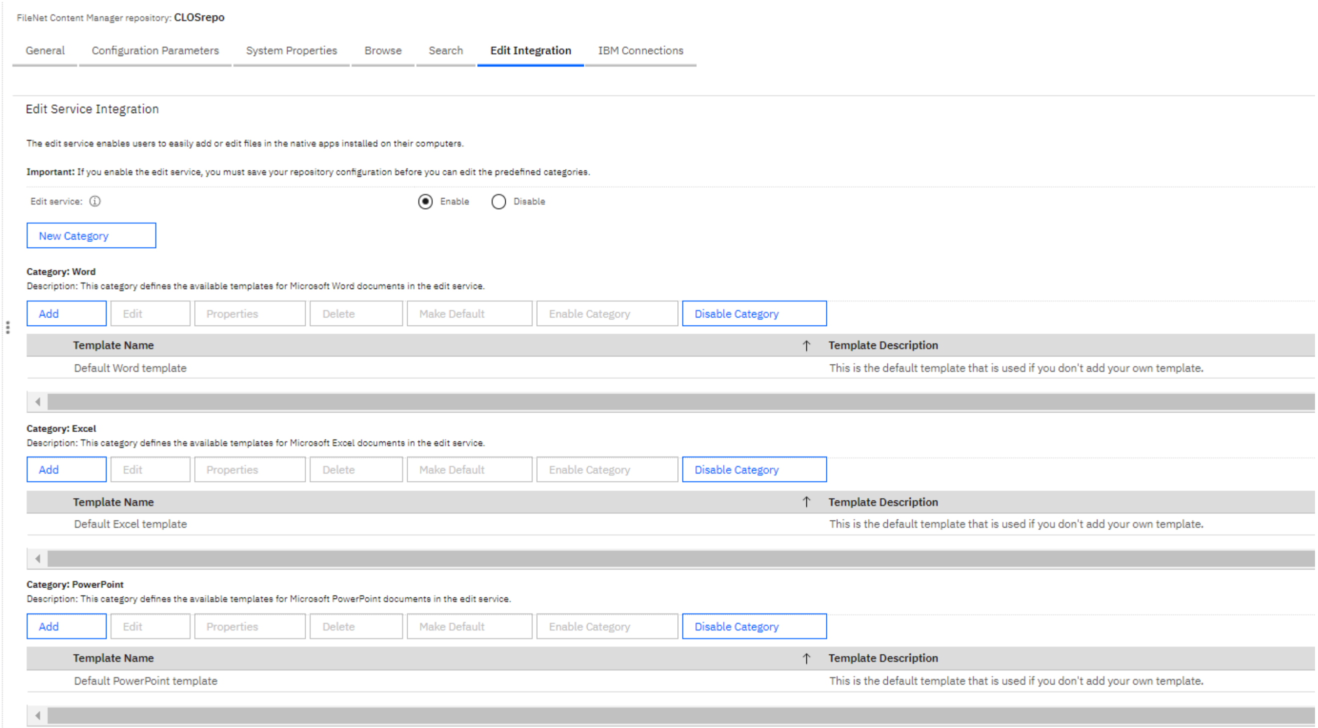


_8. The Search tab allows to specify the Search related configuration such as number of search results, what to search, etc. for this repository.

> Note that the options can impact performance, e.g. the less number of objects are retrieved in one search, the faster the result can be displayed. Further down on this tab (not shown on the screenshot) it can further be specified which comparison operators are available. So the time-consuming operator "contains" can be disallowed, leaving users with the "starts with" instead which can be executed much faster.



_9. Below the Edit Service Integration tab configured the edit service client enablement configuration and ability to define the available word, excel and power point templates for this repository



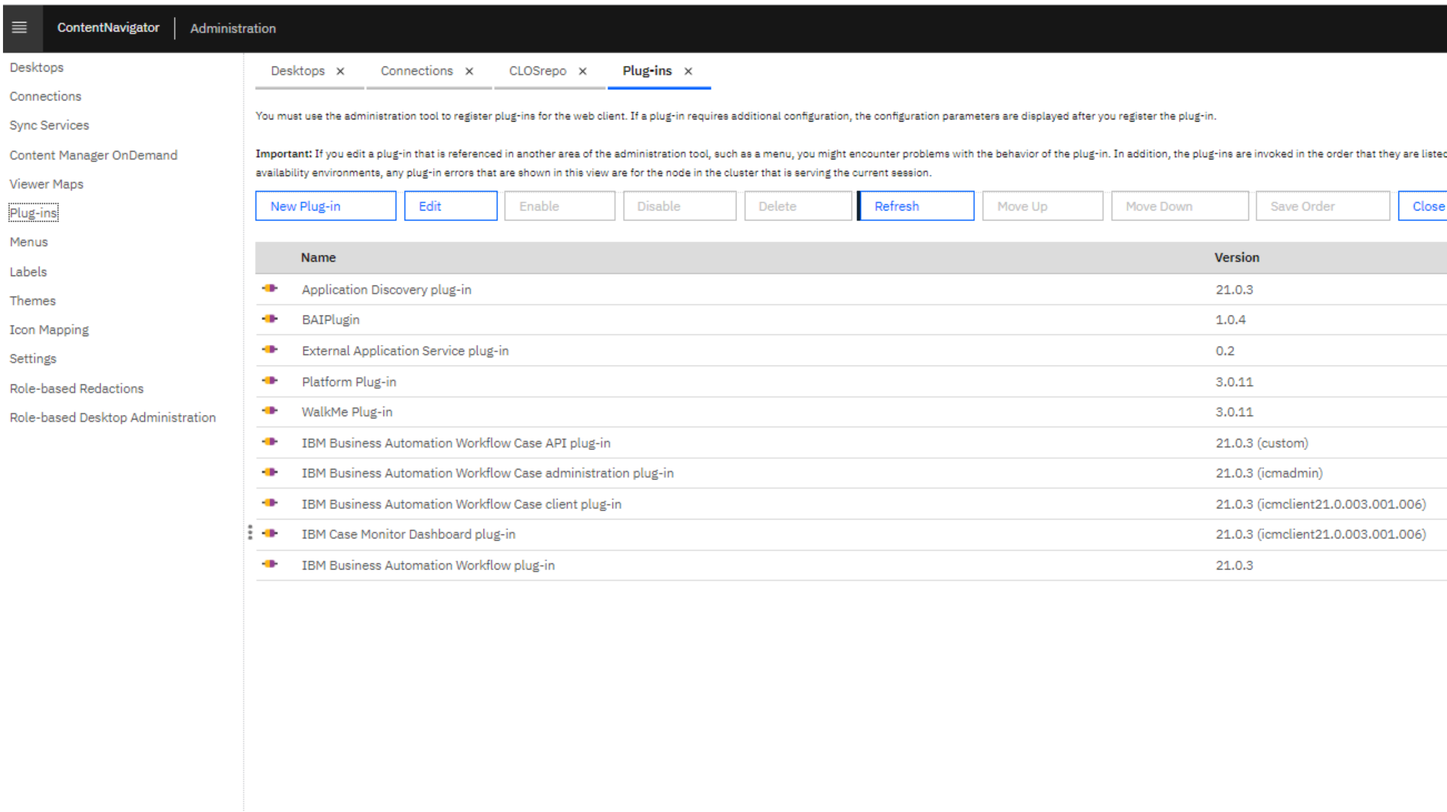
2.4 Plug-ins

Plug-ins can be used to integrate BAN with other products, to modify the behavior of the web client, or simply to extend functionality.

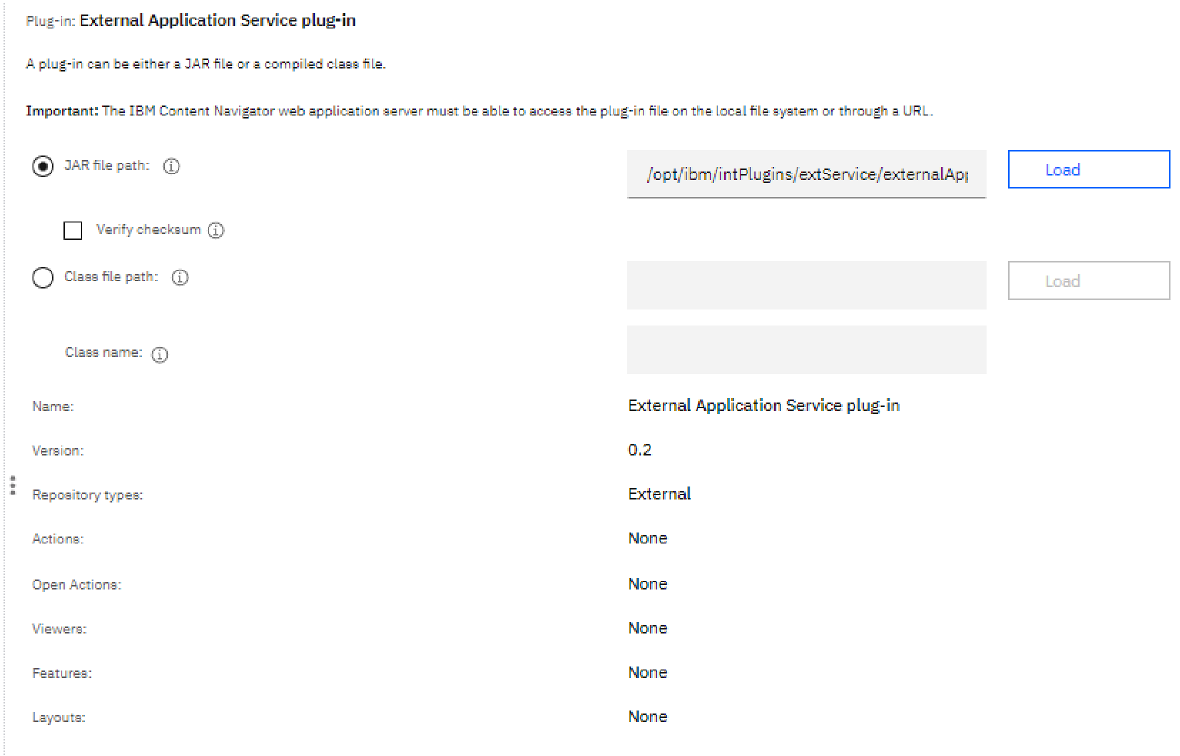
> The IBM Content Navigator web application pod must be able to access the plug-in file. During the configuration of a plugin, a JAR file or a directory compiled class files must be specified. JAR files are appropriate to be used in a production environment. A directory with complied class files can be used to accelerate the process of developing a plug-in. Do not deploy a directory with compiled class file in a high availability environment.

IBM Content Navigator includes several plug-ins that can be registered and configured. Plug-ins can extend IBM Content Navigator by providing extensions such as Features, Layouts, Menu actions, Menus and toolbars, Services, Viewers and Widgets etc.

Plugins are configured on the “Plugins” section of the Administration feature of IBM Content Navigator as shown below.



Below screenshot shows the "External Application Service" plugin. On new plugins, the below part of the dialog is shown only after the JAR file has been configured and loaded by pressing the "Load" button. Its content is dependent on the plugin and might contain further configuration for the plugin.



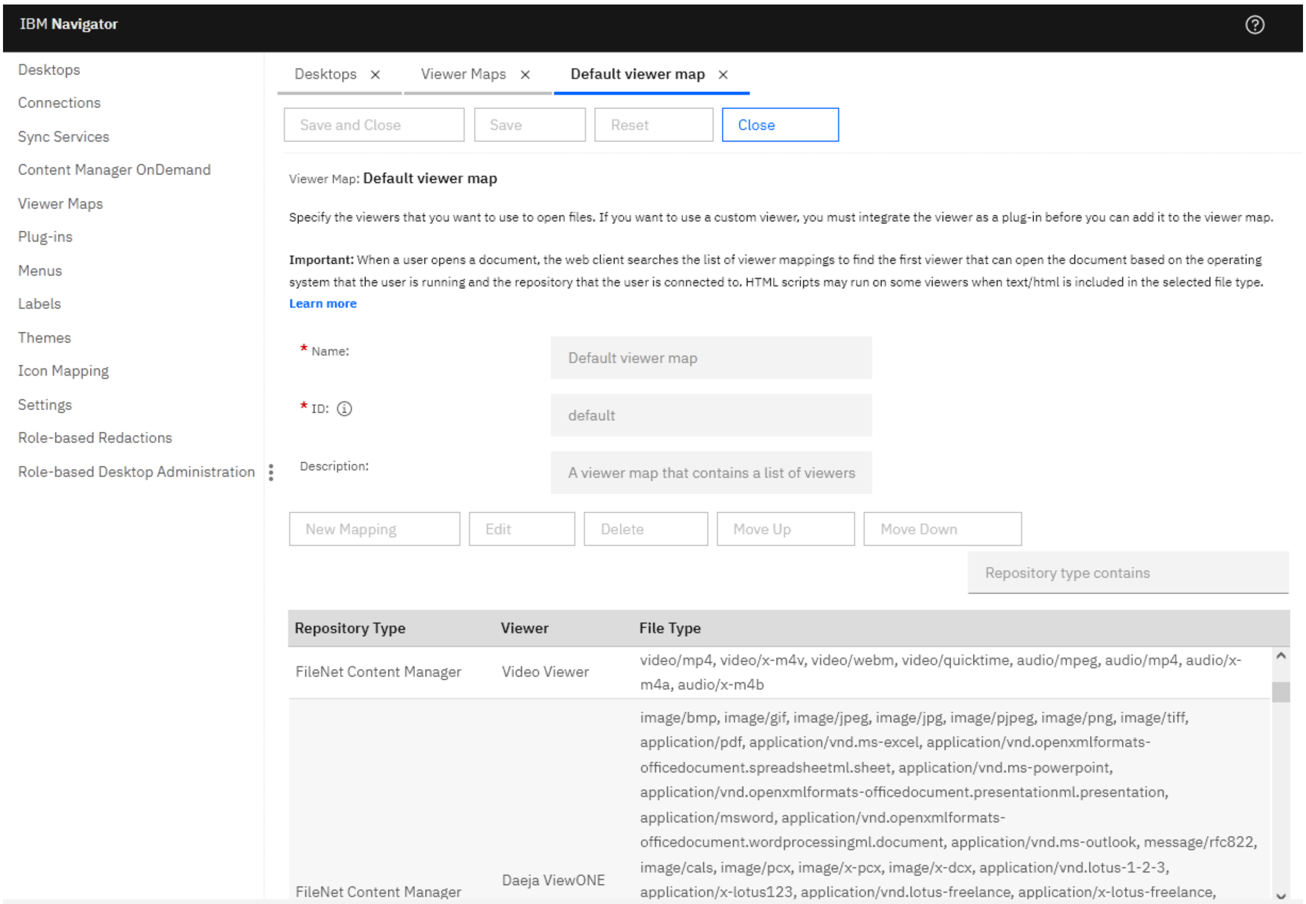
Lab participants can go through this link for more information about plug-ins
https://www.ibm.com/docs/en/content-navigator/3.0.x?topic=client-registering-configuring-plug-ins

2.5 Viewer maps

IBM Content Navigator web client works with many Viewers. The default viewer is the DaeJa Viewer, which is embedded in ICN. So-called Viewer maps specify, which viewer should be used for viewing each document type from each kind of repository. Also, different viewers can be configured to support the Preview and the Open interaction on a document.

If it's required to modify the default behavior, a copy of the default viewer map can be made, and modified accordingly, or a complete new viewer map can be created.

Viewer maps can be modified in the "Viewer Maps" section of the Administration feature.

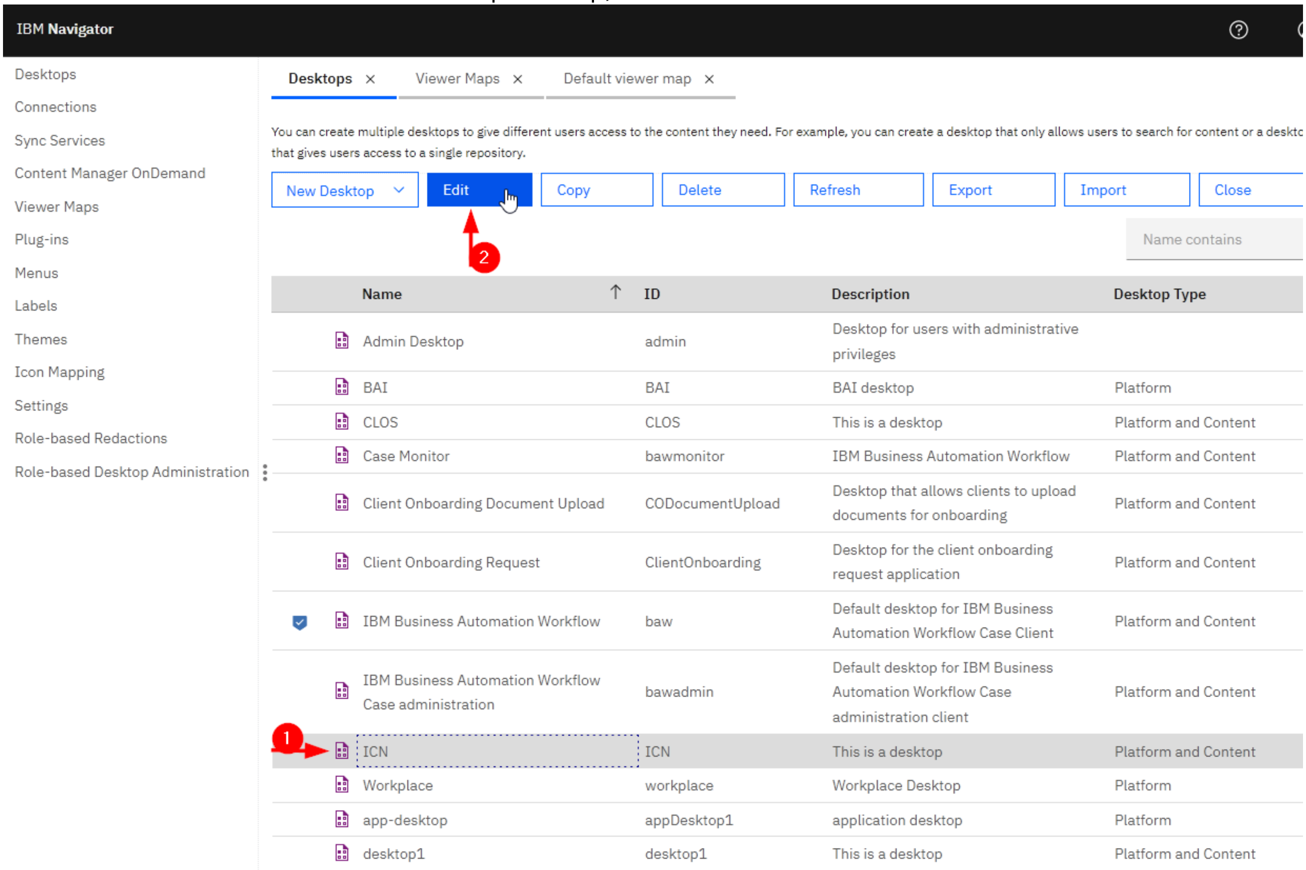


2.6 Desktop setup

A desktop in IBM Content Navigator defines the parts of IBM Content Navigator, which a user, or a department is using to interact with Content Repositories and business applications. It can be configured to expose only those features, repositories, plugins, menu entries, toolbars, etc, which are needed by the user or the department. Upon logging in to IBM Content Navigator, the name of the desktop to be used is provided as parameter, it is coded into the URL of IBM Content Navigator.

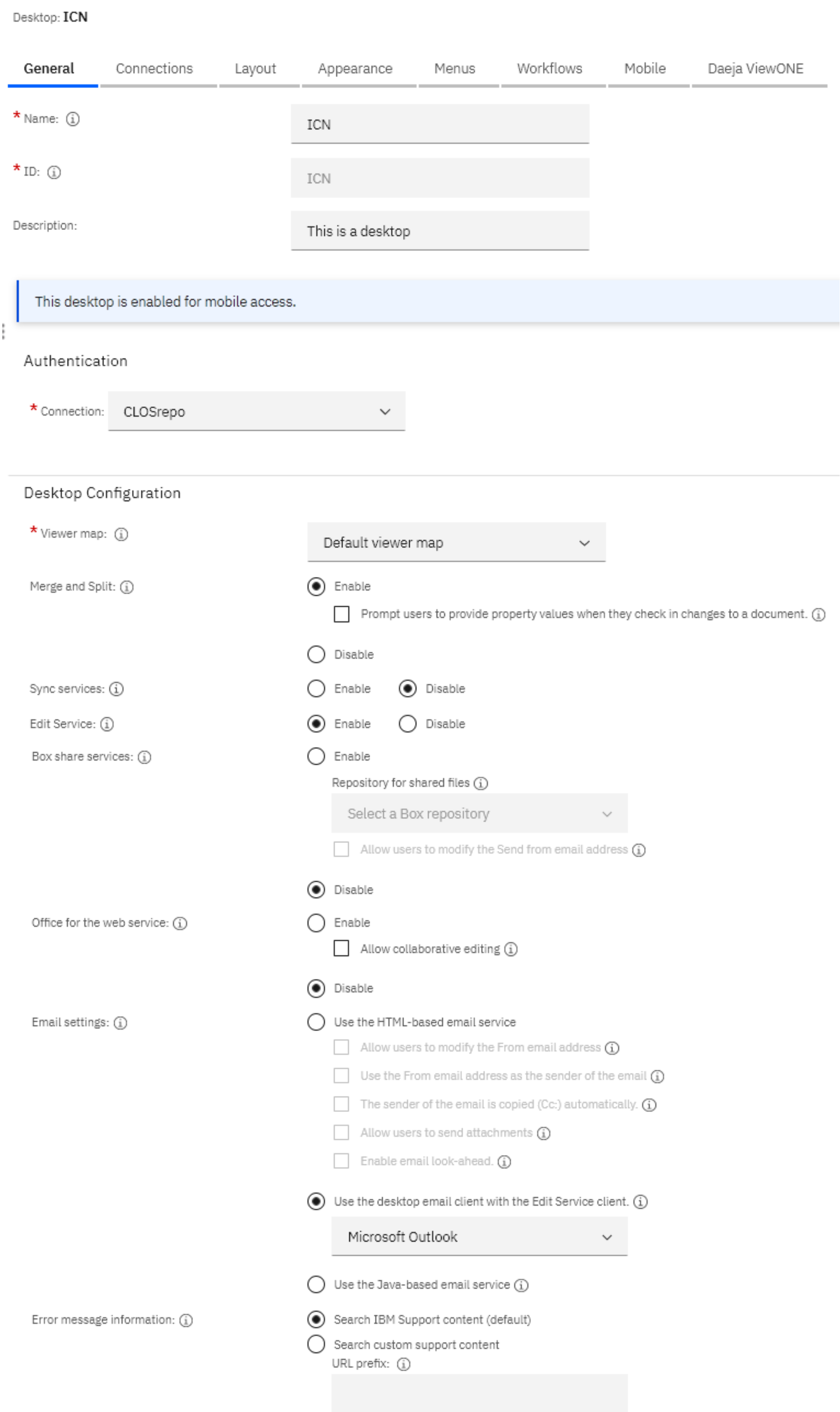
In IBM Content Navigator a number of these desktops can be created. Further, upon initial installation of the Cloud Pak for Business Automation environment installation, several desktops are automatically created, if enabled in the configuration.

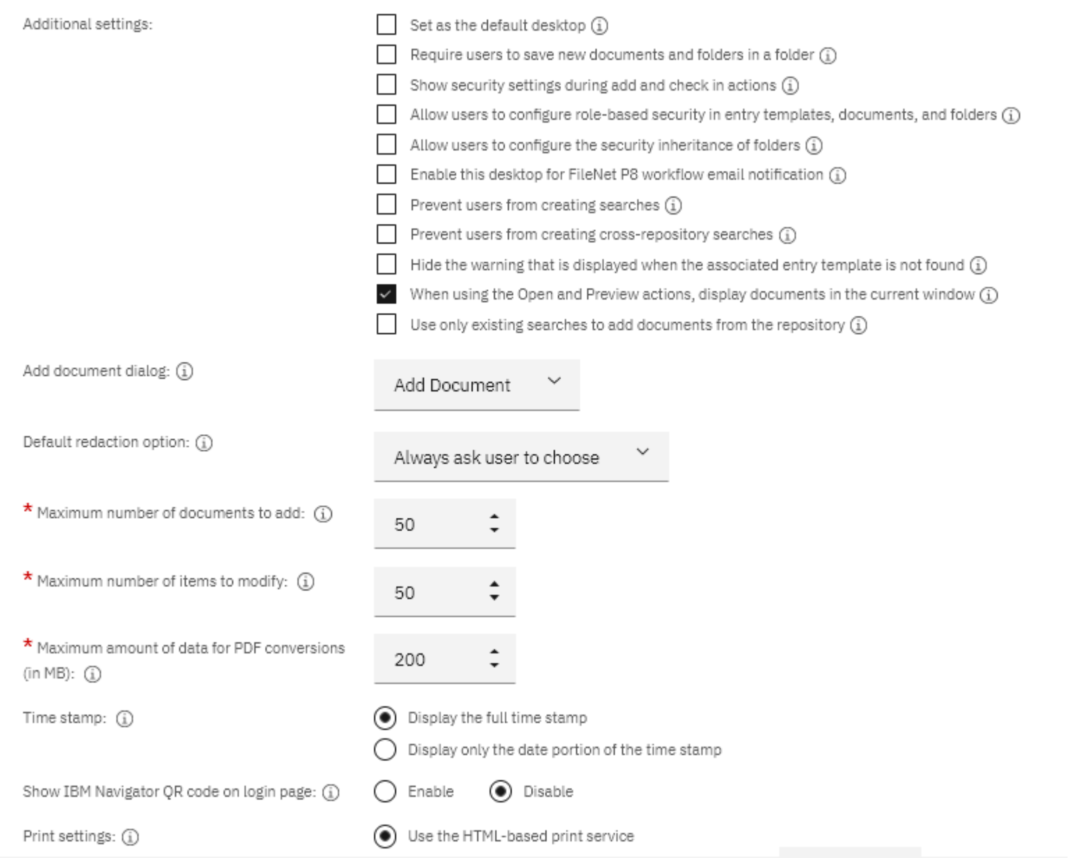
Below screenshots show how the desktop is setup, which is used for this lab.



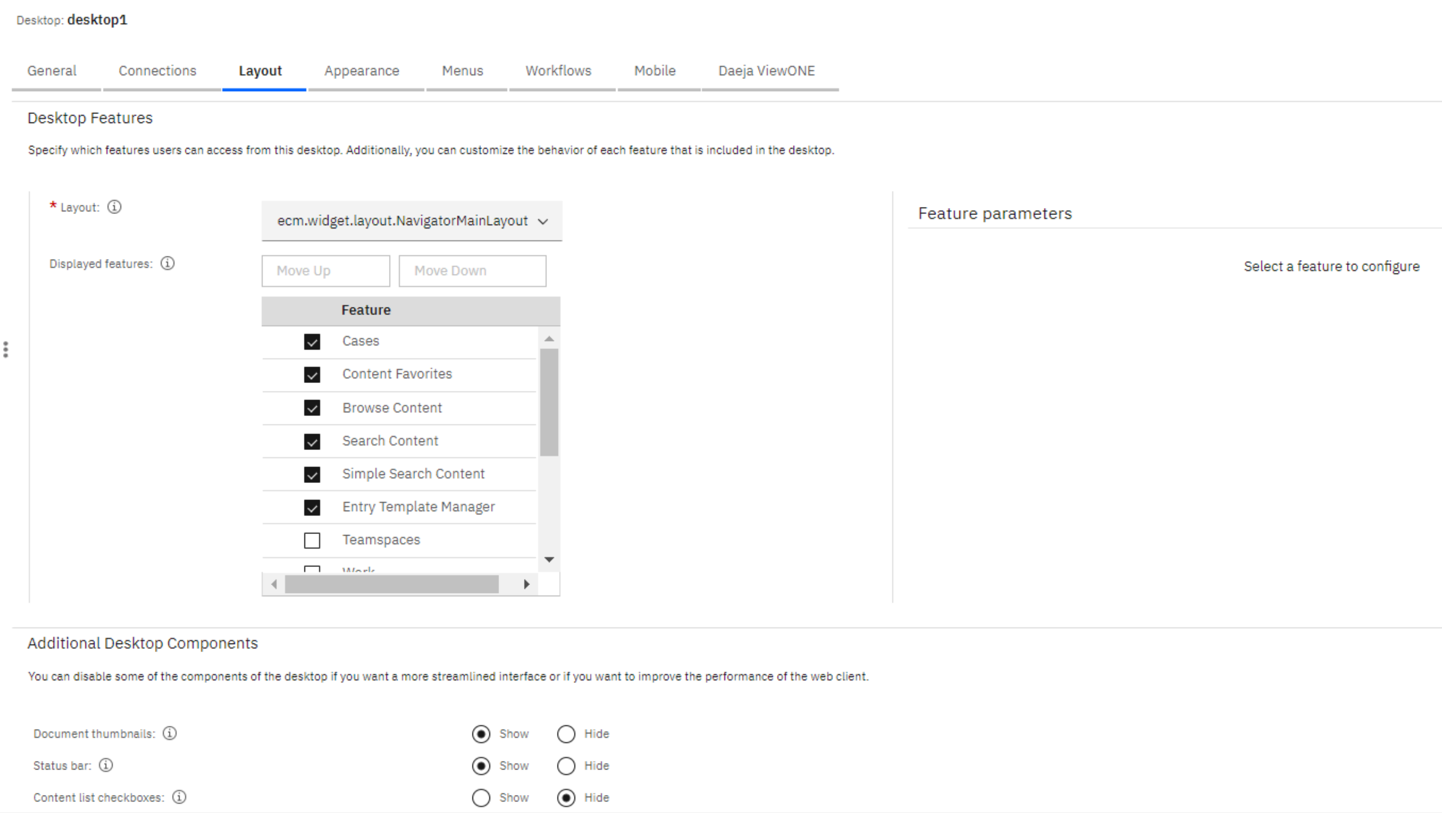
Desktop General settings

Below screenshot shows Desktop general settings such as Authentication, Viewer map, Edit service and Merge & Split configuration.

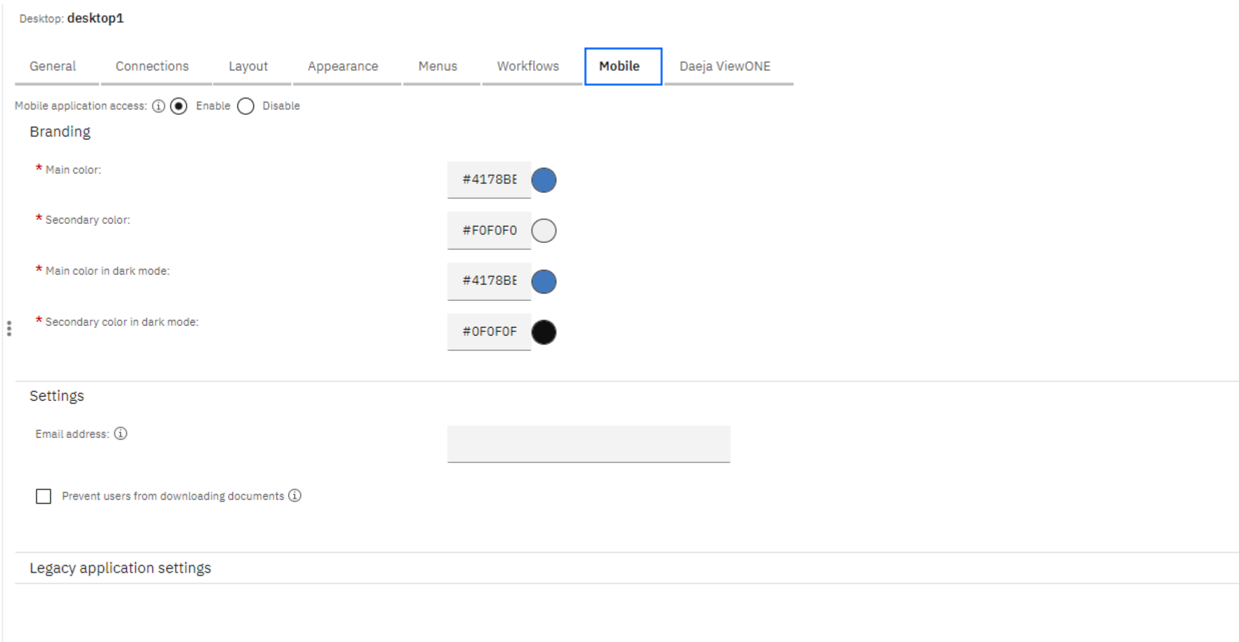

Desktop: ICN
General
Connections
Layout
Appearance
Menus
Workflows
Mobile
Daeja ViewONE
* Name:
ICN
* ID:
ICN
Description:
This is a desktop
This desktop is enabled for mobile access.
Authentication
* Connection:
CLOSrepo
Desktop Configuration
* Viewer map:
Default viewer map
Merge and Split:
Enable
Prompt users to provide property values when they check in changes to a document.
Disable
Sync services:
Enable
Disable
Edit Service:
Enable
Disable
Box share services:
Enable
Repository for shared files
Select a Box repository
Allow users to modify the Send from email address
Disable
Office for the web service:
Enable
Allow collaborative editing
Disable
Email settings:
Use the HTML-based email service
Allow users to modify the From email address
Use the From email address as the sender of the email
The sender of the email is copied (Cc:) automatically.
Allow users to send attachments
Enable email look-ahead.
Use the desktop email client with the Edit Service client.
Microsoft Outlook
Use the Java-based email service
Error message information:
Search IBM Support content (default)
Search custom support content
URL prefix:



The Layout tab, under “Desktop features” > ”Displayed features” provides the list of features which can be selected for a desktop such as Favorites, Browse Content, Search Content, Simple Search Content and Entry Template Manager. Their order can also be specified, see below screenshot for details.



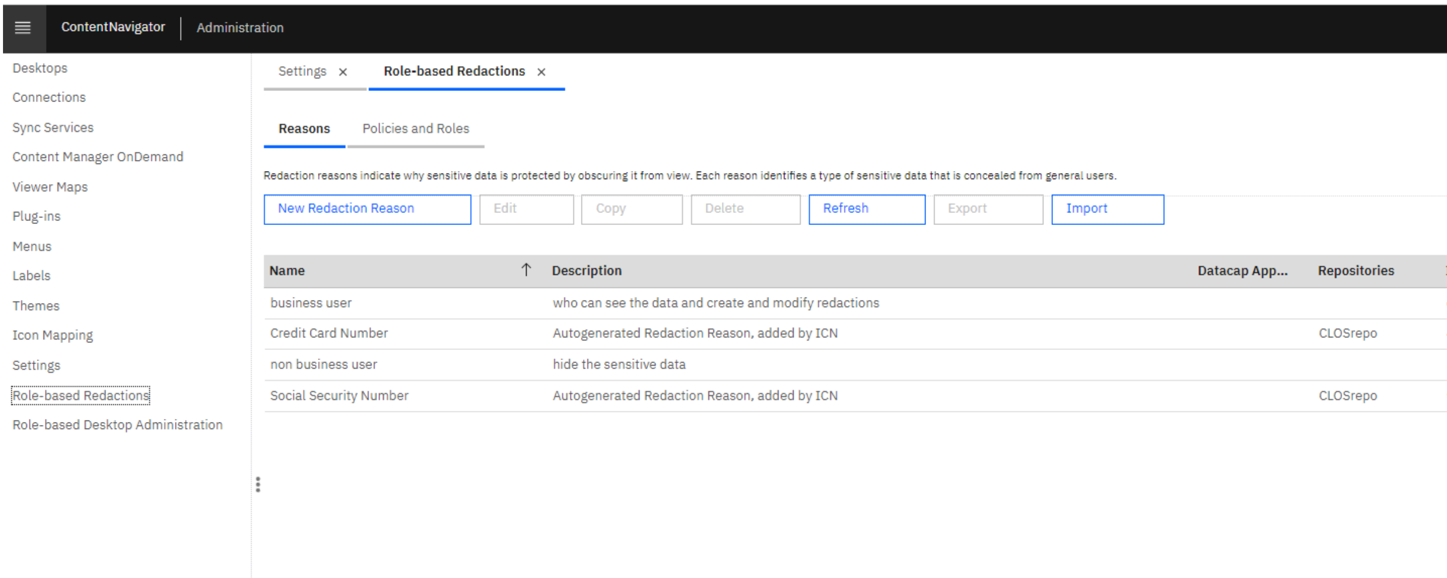
Note that there is also a tab to configure properties for the IBM Content Navigator Mobile application.



2.7 Role-based Redactions

Role-based redactions limit a user's exposure to sensitive data based on the user's business role. Enterprises no longer need to have multiple versions of the same document with different redacted parts for the different roles. Role-based redactions use policies that define the redactions to apply to a document. When a user opens, downloads, prints, or emails a document that contains sensitive data, redactions are burned into the document in real time. Role-based redactions are supported for TIFF and PDF files on the FileNet P8 repositories on the IBM Daeja ViewONE Virtual viewer.

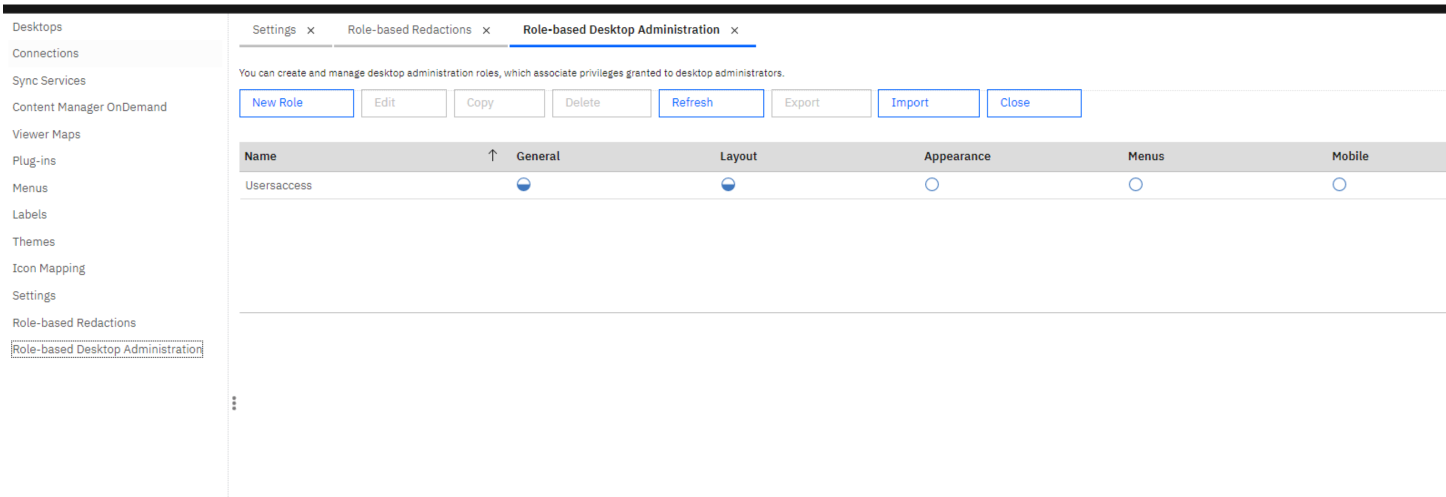
On the "Role based redaction" entry of the Administration feature, the role-based redactions can be configured, see below screenshot.



Lab participants can go through below link for more configuration information on role base redactions https://www.ibm.com/docs/en/content-navigator/3.0.x?topic=components-configuring-role-based-redactions-filenet-p8-repositories

2.8 Role-based Desktop Administration

Role-based administration enables a global administrator to delegate some administration tasks to other administrators. This can reduce the work backlog for the global IT department, move administration tasks closer to the users that require them, and improve the turnaround time for some administration tasks.



Lab participants can go through IBM Content Navigator web client features for more information.

3 Exercise: Creating Entry Templates for Managing Documents and Folders

3.1 Introduction

Entry templates are created in IBM Content Navigator desktop, typically by a relatively small set of users such as managers and supervisors etc, and are used by a much larger number of users. Some of the key capabilities of entry templates and advantages of using them are as follow

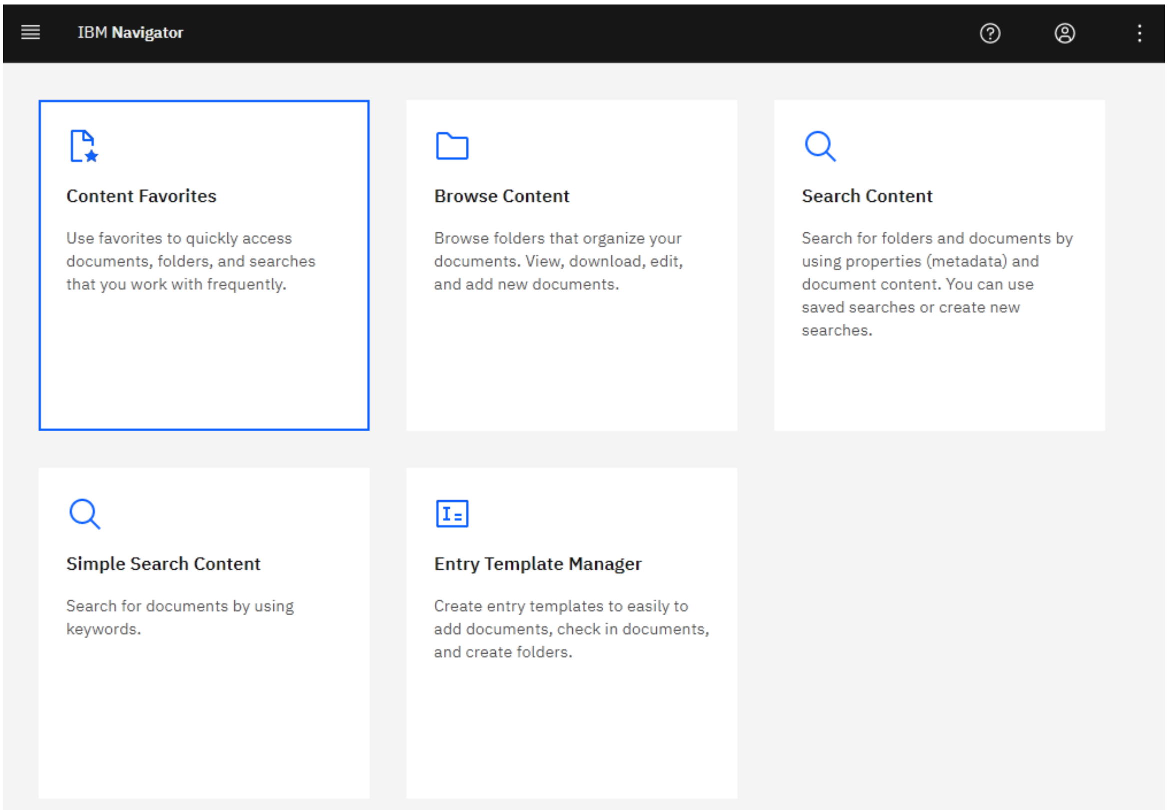
- Documents, folders, form data, and custom objects can be created with entry templates.
- Users who are not administrators can create entry templates. For example, a project manager can create the entry templates used by the project team.
- Entry templates support records management by providing a simplified and customizable method of declaring a document as a record.
- Entry templates can specify the folder in which the object will be filed, can either prevent or allow the user to change the folder, and can restrict a user to select a particular folder or its subfolders.
- Default property values can be specified in an entry template, and the template designer can select to show or hide each property to users of the template.
- Entry templates can specify whether a document can be added as a major or minor version and can specify whether a user can change this setting.
- Entry templates predefine the Document class of an uploaded document or folder, thereby making sure users select the right one for a specific task.
- Entry templates can specify the access rights for the object, and the designer can elect to hide or show the access rights for the user to modify.
- Entry templates can serve as placeholders for documents that a user provides while processing a workflow step. When the user clicks the entry template in a workflow step processor, the entry template wizard prompts the user to add a document and the new document replaces the entry template attachment.
- Folders can be configured with an allowed set of entry templates to further assist a user to select the correct entry template for a specific folder.

3.2 Exercise Instructions

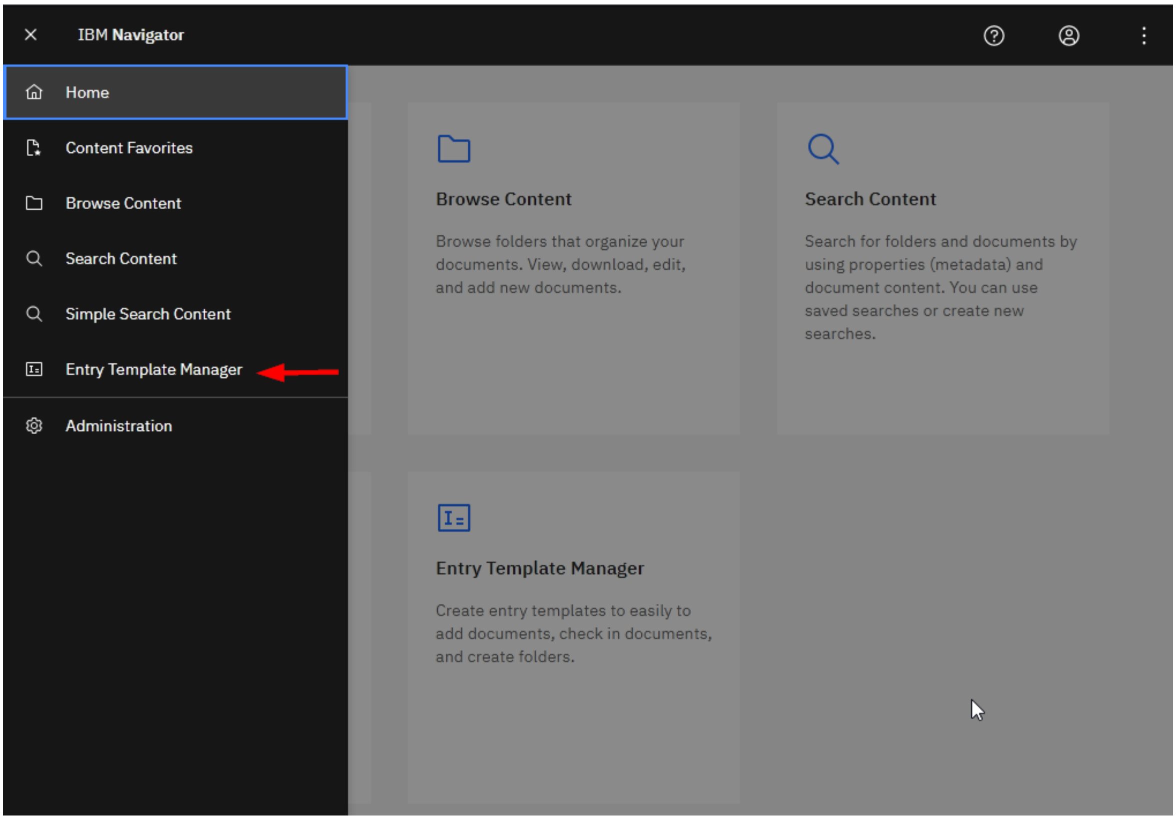
Before starting the IBM Content Navigator lab exercise, please complete the content lab 1, “Setting up FileNet Content Platform Engine for Automation Projects on Cloud Pak for Business Automation” since below sections make use of the document classes and their properties for the entry templates creation etc.

3.2.1 Creating entry templates to manage documents

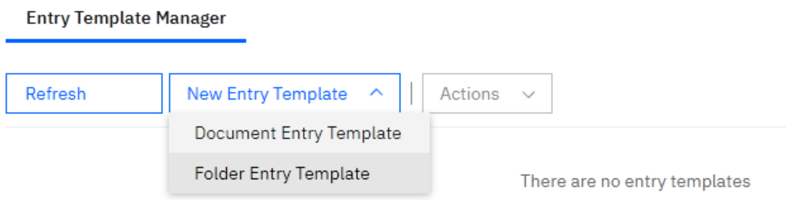
_1. Open the browser and navigate to the IBM Content Navigator desktop by using the “ICN Lab” URL provided in the GitHub lab page. Login using the username and the password which you obtained before Once logged in to desktop, home page would be display like below.



_2. Click on the Home menu icon at the left top corner under IBM Navigator, the navigation pane would display the features as shown in the below screen shot. Click on either Entry Template Manager tile from the dashboard or from navigation pane on the feature with the name “Entry Template Manager”.

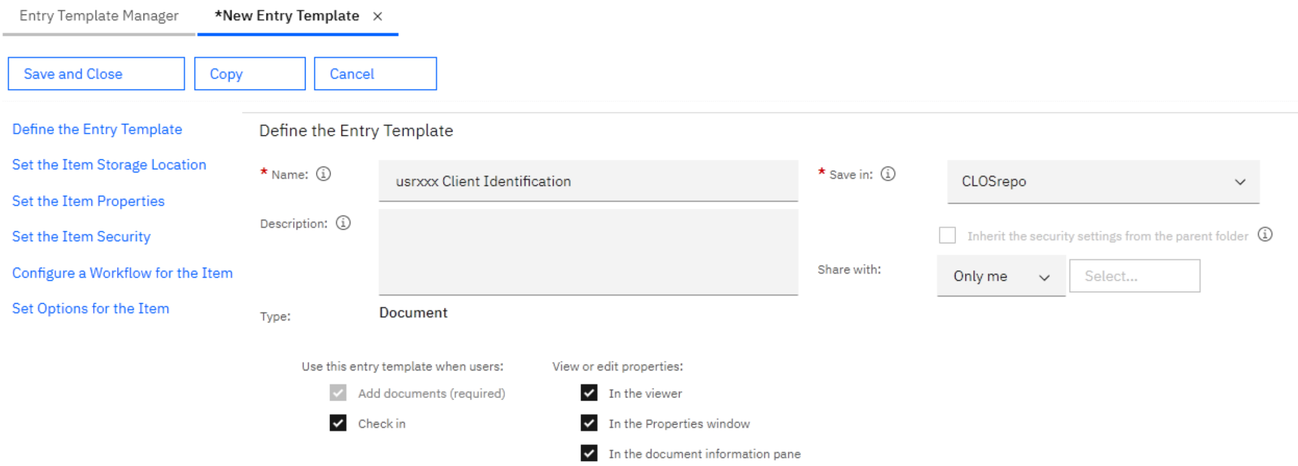


_3. Click on new entry template and then select Document Entry Template as shown in below screen



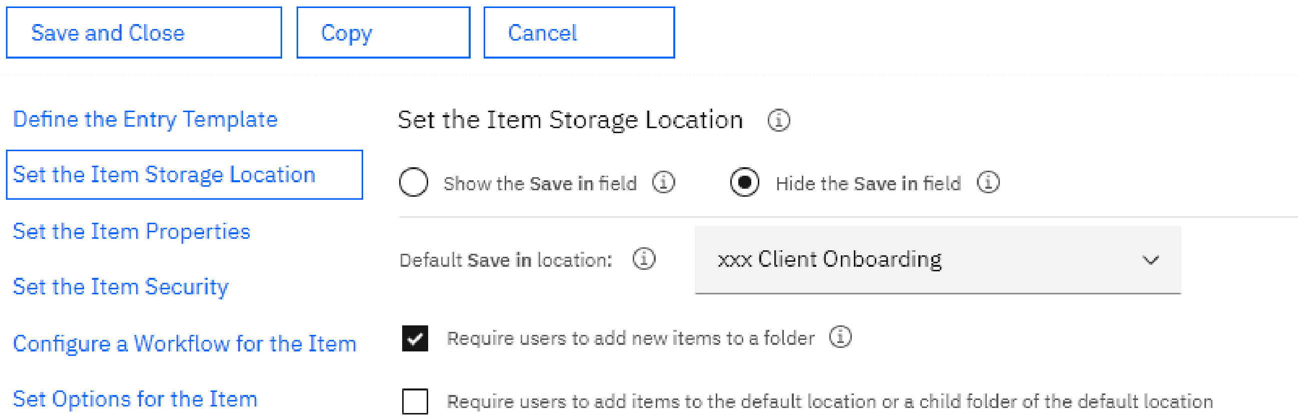
Below Screenshot shows different sections in blue color on the left side menu in the new Entry Template. Each section has mandatory fields which need to be completed for the entry template creation.

_4. In the “Define the Entry Template section”, provide the Name and Description of document entry template for example provide Name "usrxxx Client Identification". Replace “usrxxx” with your username (everywhere).



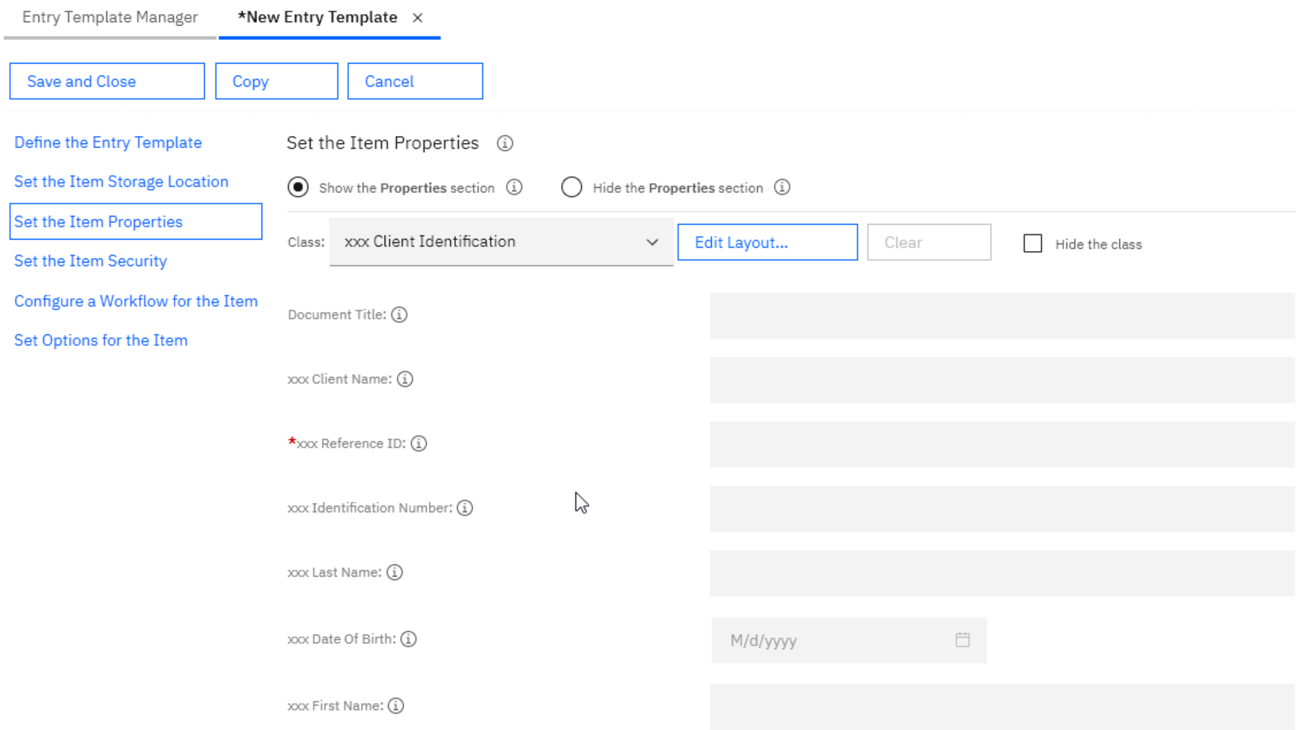
Note the entry template security is setup to share the entry template only with the user defining it.

_5. In the “Set the item Storage location section”, select the folder from the dropdown menu which was created as part of content lab 1 like “usrxxxClient Onboarding”. To hide the save in field from the users who want to use this entry template for adding documents, checkmark the “Hide the save in field“ button as shown in below screenshot.



_6. In section “Set the item properties section”, select the document class “usrxxx Client Identification” from the dropdown menu. That class should have been created as part of Content Lab “Setting up FileNet

Content Platform Engine for Automation Projects on Cloud Pak for Business Automation". Checkmark the "Hide the class" check box as shown below to hide the class name from the user.

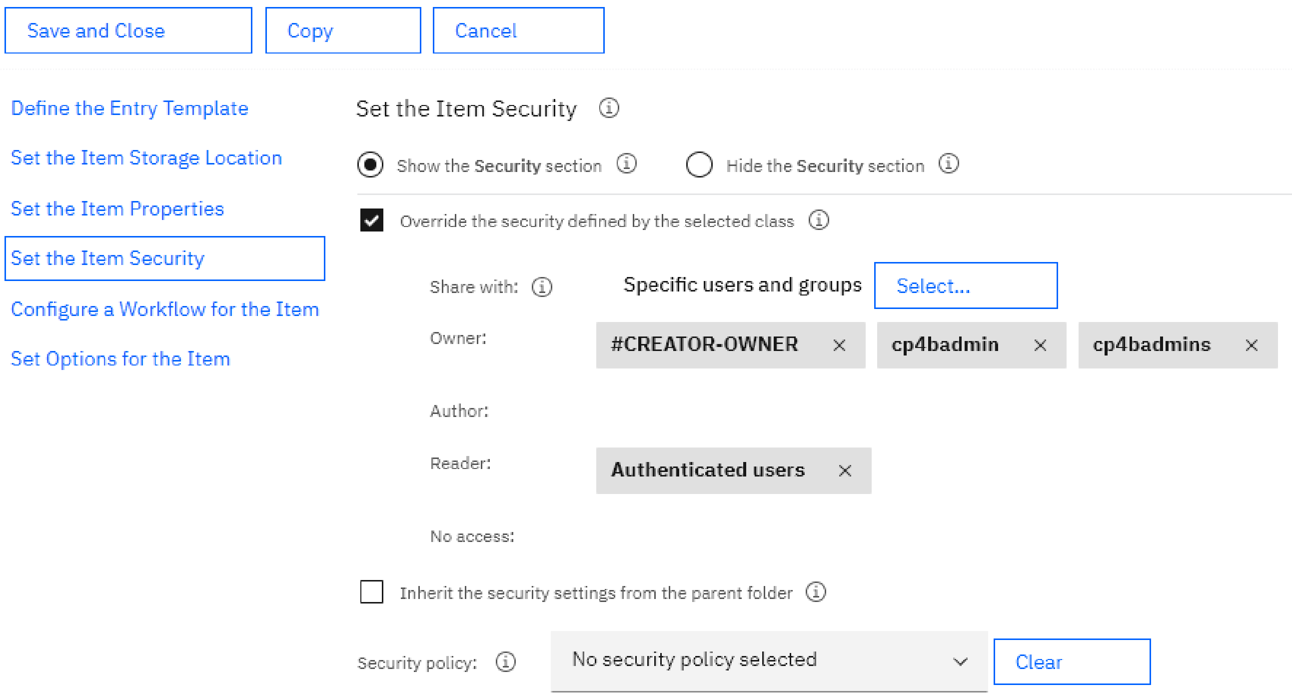


> By clicking on the "Edit Layout..." button, the layout of the property fields, and the labels can be configured according to the needs. Optionally, the layout of the entry template can be adapted here. If this is done, please note that each entry field has a set of properties, which influence the layout and the behavior, when modified.
> For the fields to show up nicely, its recommended to set their width to 80% of the window width.

_7. In section "Set the item Security section", the security settings for the created documents can be specified. The default settings shown for the new Entry template come from the class default instance security, which were configured in section "Updating the default Instance Security" in Lab "Setting up FileNet Content Platform Engine for Automation Projects on Cloud Pak for Business Automation".

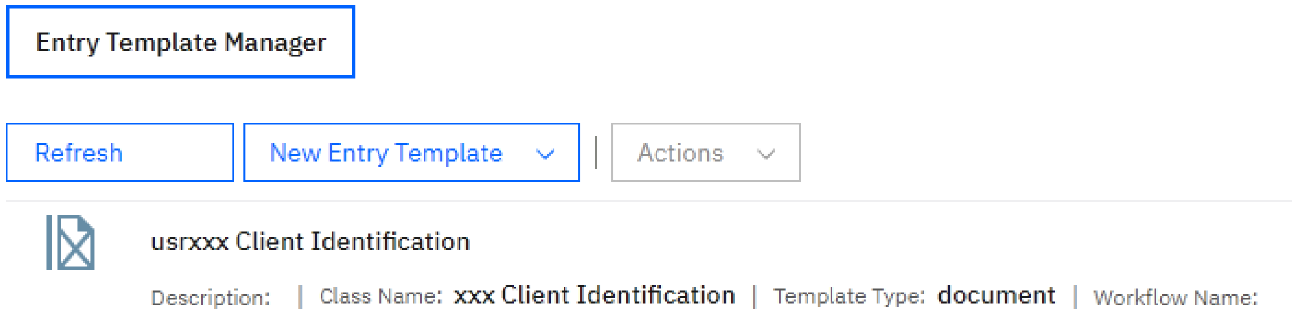
If the settings are different from below screenshot, adapt them accordingly. Then checkmark the "Hide the Security section" to hide the Security section from the users when using the entry template.

> As the Owner field includes the "#CREATOR-OWNER", the name of the user who adds the document will automatically get owner access to the created documents.



> Note that also Security Templates and Security Inheritance can be configured. Security Templates can assign different security settings on different lifecycle stages of the document. With it, a user checking out a document can for example get elevated security on the document. Interested readers are referred to https://www.ibm.com/docs/en/filenet-p8-platform/5.5.x?topic=policies-about-templates for details.

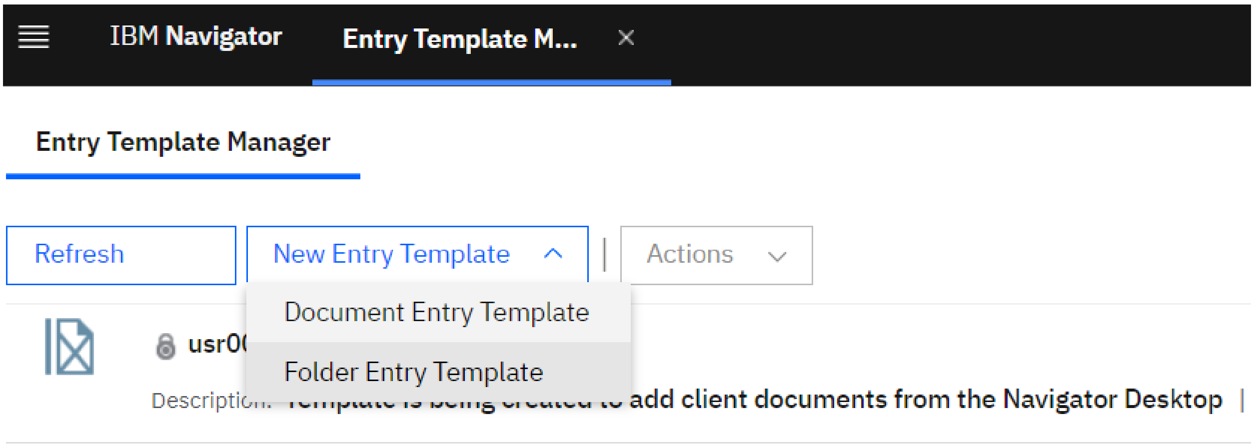
_8. Click on save and close button.



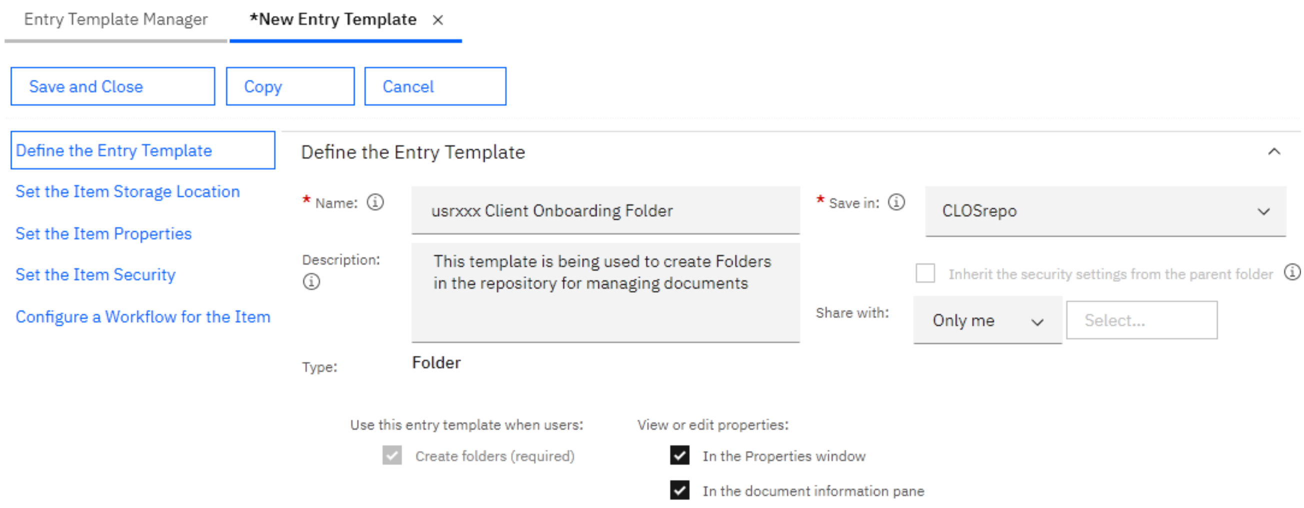
3.2.2 Creating entry templates to manage folders

The Folder Entry Template is created in the same way as you created the Document Entry Template in the previous section.

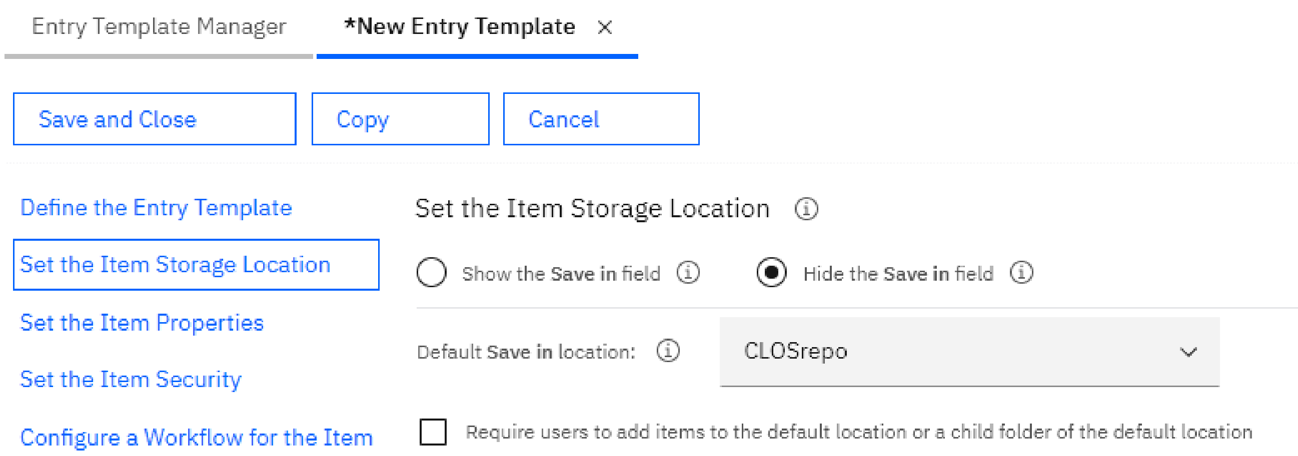
_1. Click on Folder Entry Template from the dropdown menu as show in below screenshot



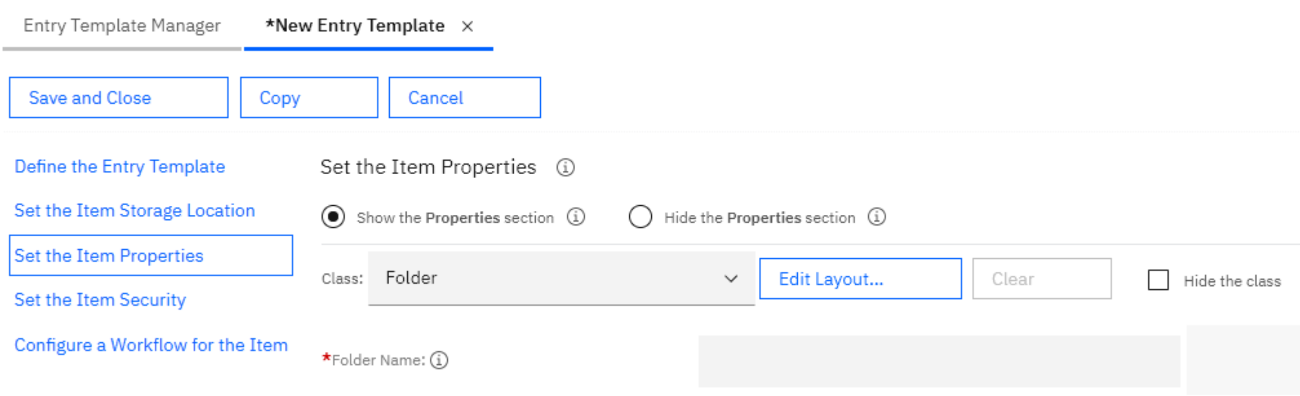
_2. In section “Define the Entry Template section”, provide the Name and Description of folder entry template for example provide Name "usrxxx Client Onboarding Folder"



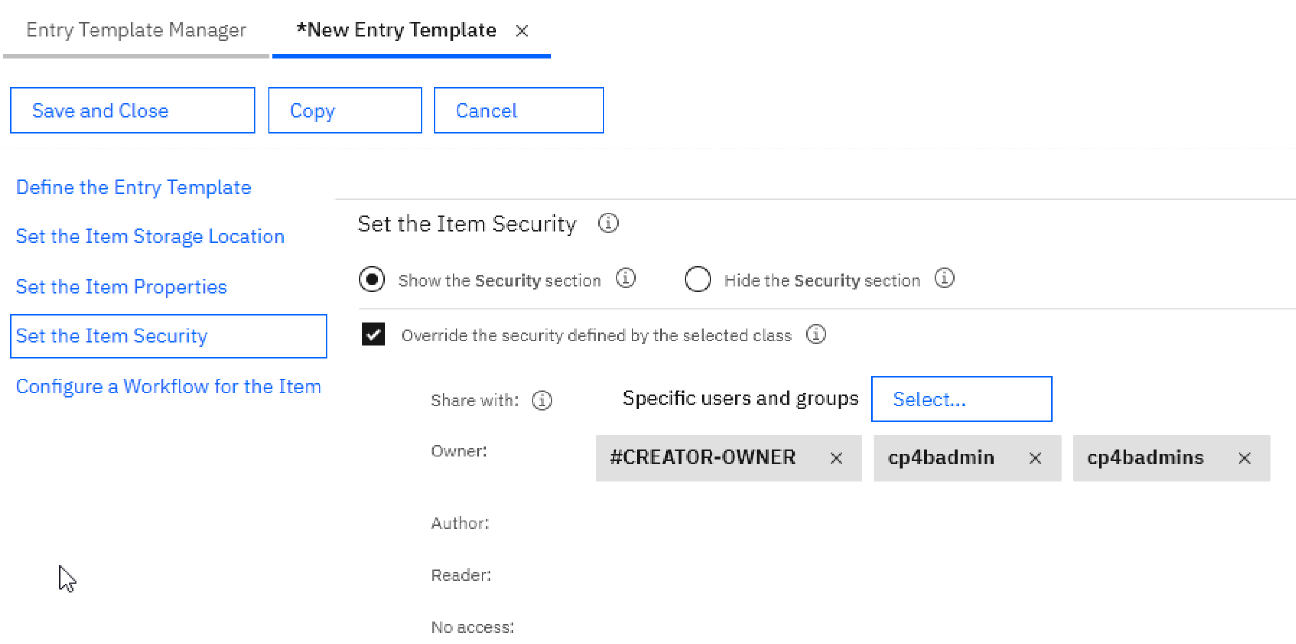
_3. In section “Set the Item Storage section”, leave the Default Save in location as default and select the “Hide the save in field”.



_4. No changes necessary in the “Set the Item Properties” section. Note that on this section, different folder classes and properties can be configured.



_5. In section “Set the Item Security section”, remove the group “cp4bausers” from the Owner section by clicking the small “x” at the right of the name. Also removed “Authenticated users” from the Reader section in the same way. This way, folders created with this entry template will only be visible for administrators and the user creating it. To configure to hide the security section from the entry template while creating folders, select the “hide the Security section” check box.



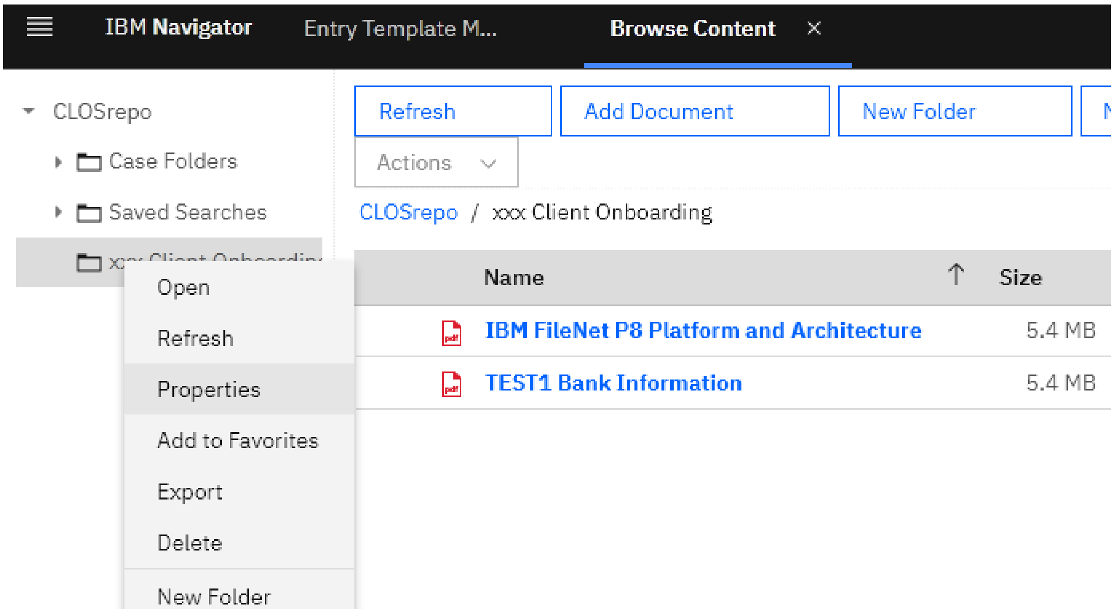
_6. Click on Save and Close button.

3.2.3 Associate entry templates with folders

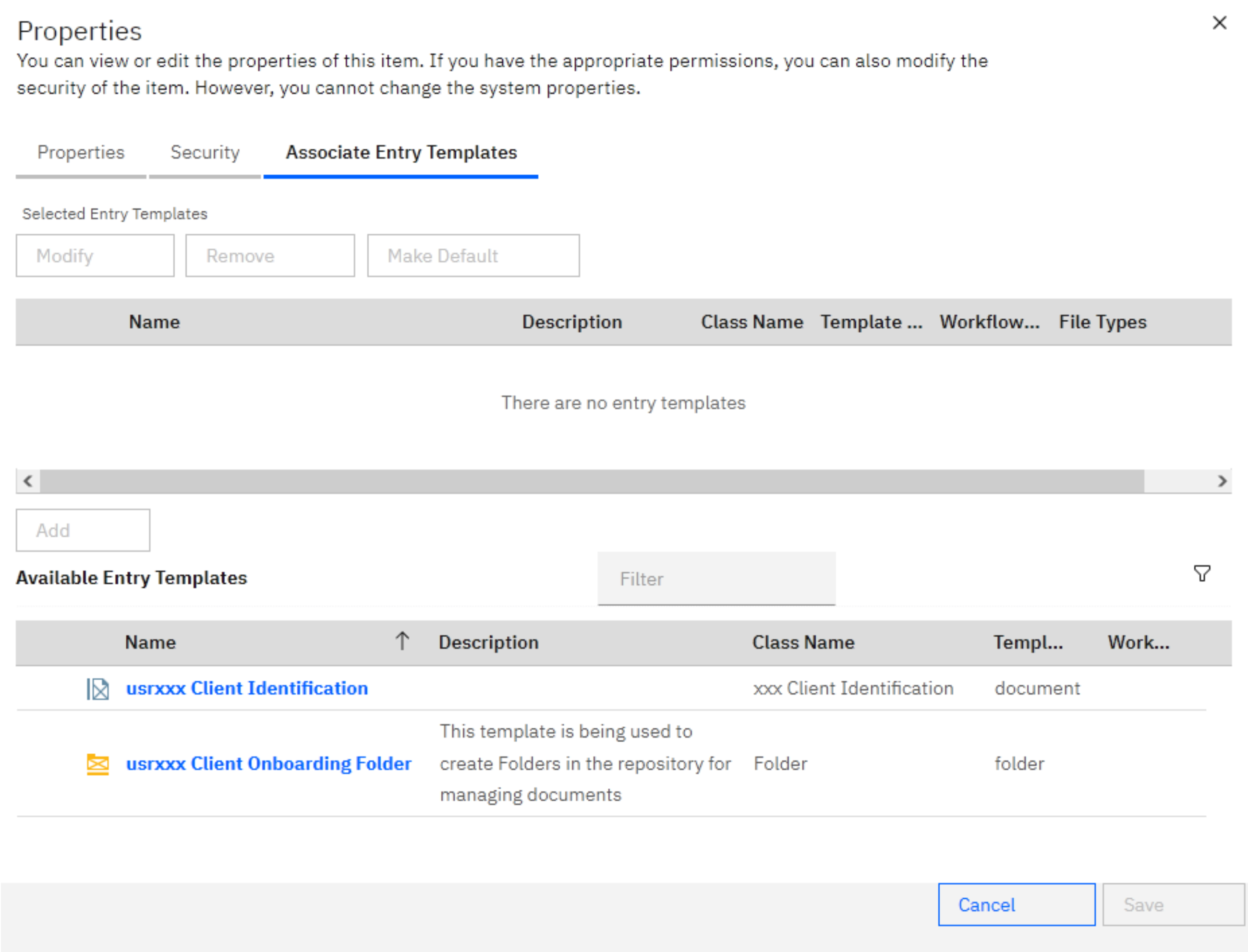
Associating entry templates with a folder allows to preconfigure the how documents and folders can be added to the folder. Valid options are preconfigured in the entry templates for document and folder classes, security settings, property values, et cetera, and can even be hidden to avoid misconfiguration. With entry templates specified, the user interface of IBM Content Navigator can even be configured to disallow any other possibility to create documents and folders.

Steps:

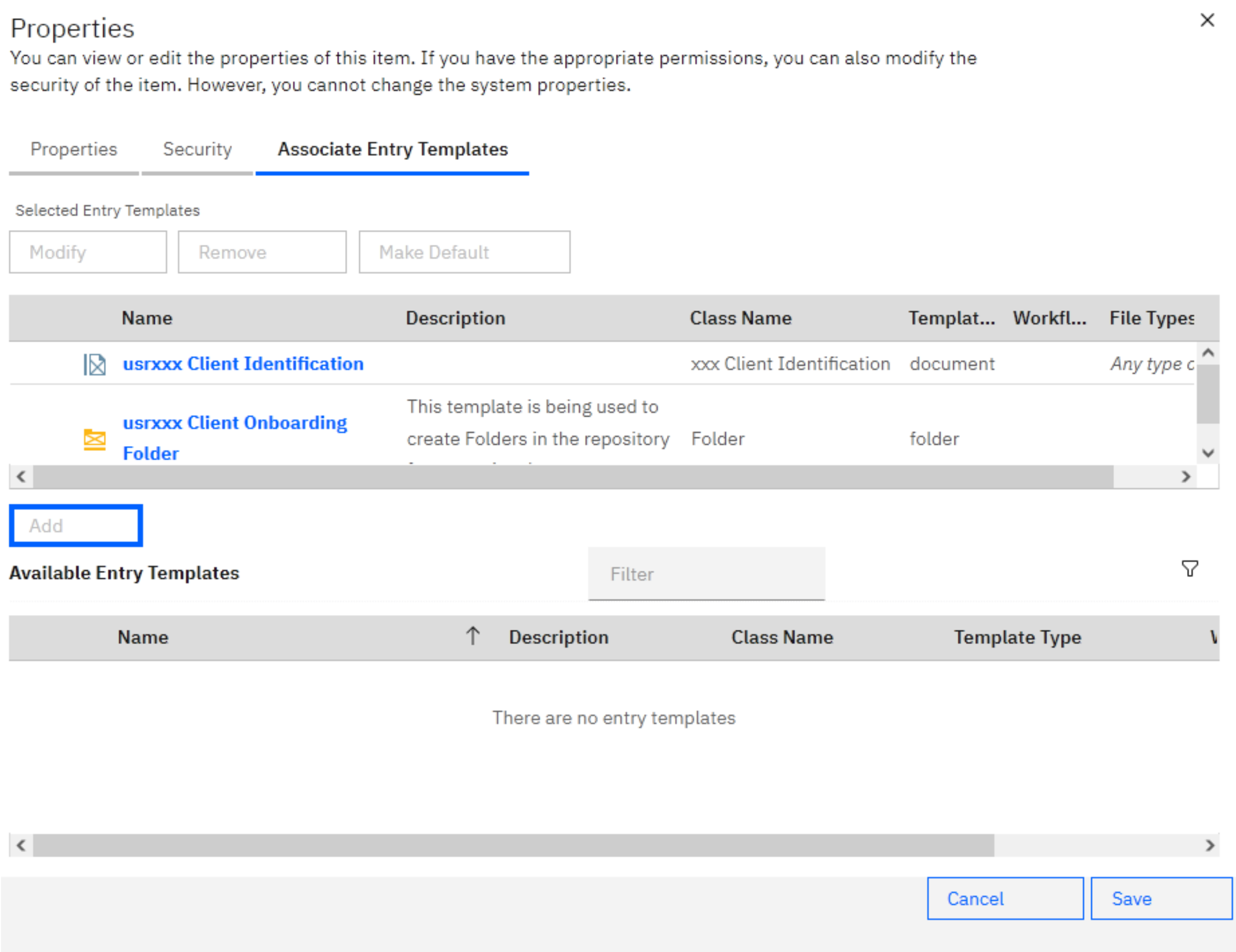
_1. Click on “Browse Content” from the home menu and select the folder which you created as part of the Content Lab “Setting up FileNet Content Platform Engine for Automation Projects on Cloud Pak for Business Automation”. Right click and open the Properties dialog for the folder.



_2. In the Associate Entry Templates tab, you can select from the available entry templates which you created in the previous section.



_3. Press the Shift key on the keyboard, then click once on both Entry templates to select both. Then click on the "Add" button to add them to the list of entry templates associated with the folder. Click "Save".


Properties
You can view or edit the properties of this item. If you have the appropriate permissions, you can also modify the security of the item. However, you cannot change the system properties.
Properties
Security
Associate Entry Templates
Selected Entry Templates
Modify
Remove
Make Default
Name
Description
Class Name
Templat...
Workfl...
File Types
usrxxx Client Identification
xxx Client Identification
document
Any type c
usrxxx Client Onboarding Folder
This template is being used to create Folders in the repository
Folder
folder
Add
Available Entry Templates
Filter
Name
Description
Class Name
Template Type
There are no entry templates
Cancel
Save

4 Exercise: Add Documents using Entry Templates

4.1 Introduction

Using Entry Templates for adding documents to a repository has several advantages. By preconfiguring configuration information such as property values, security information or the document class, users don't need to provide this data again and again for every document, thereby saving time, and avoiding errors. Hiding sections of the entry template furthermore makes sure that the intended configuration is not changed accidentally. Finally, property values of added documents or folders can be arranged nicely making it easier to add the data in some useful order.

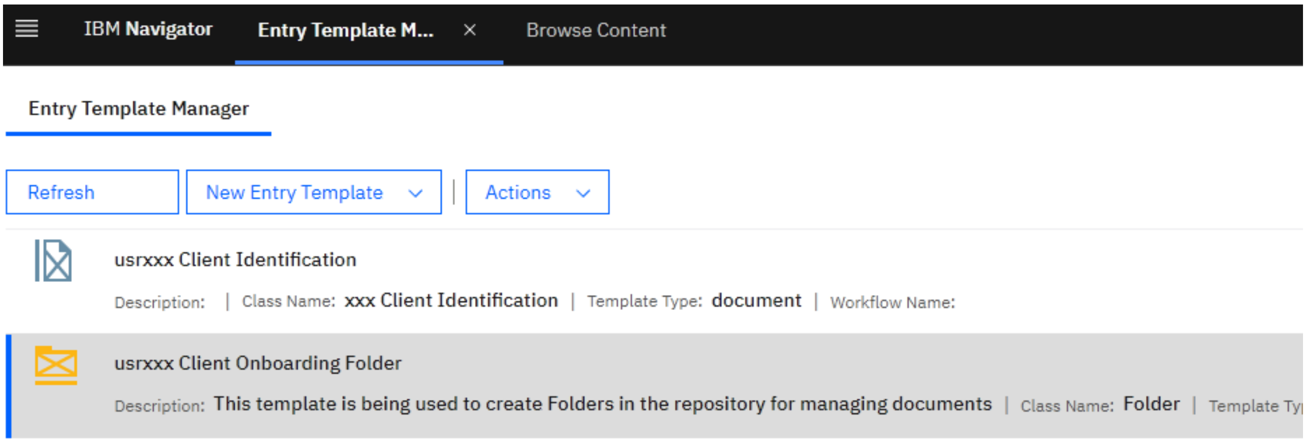
4.2 Exercise Instructions

This section shows how to add the documents for the Client Information class. Two possibilities are shown, the first one will directly invoke the entry template to add a document, the second one uses it implicitly by just trying to add a document to the "usrxxx Client Documents" folder and using the fact that an entry template was associated with it.

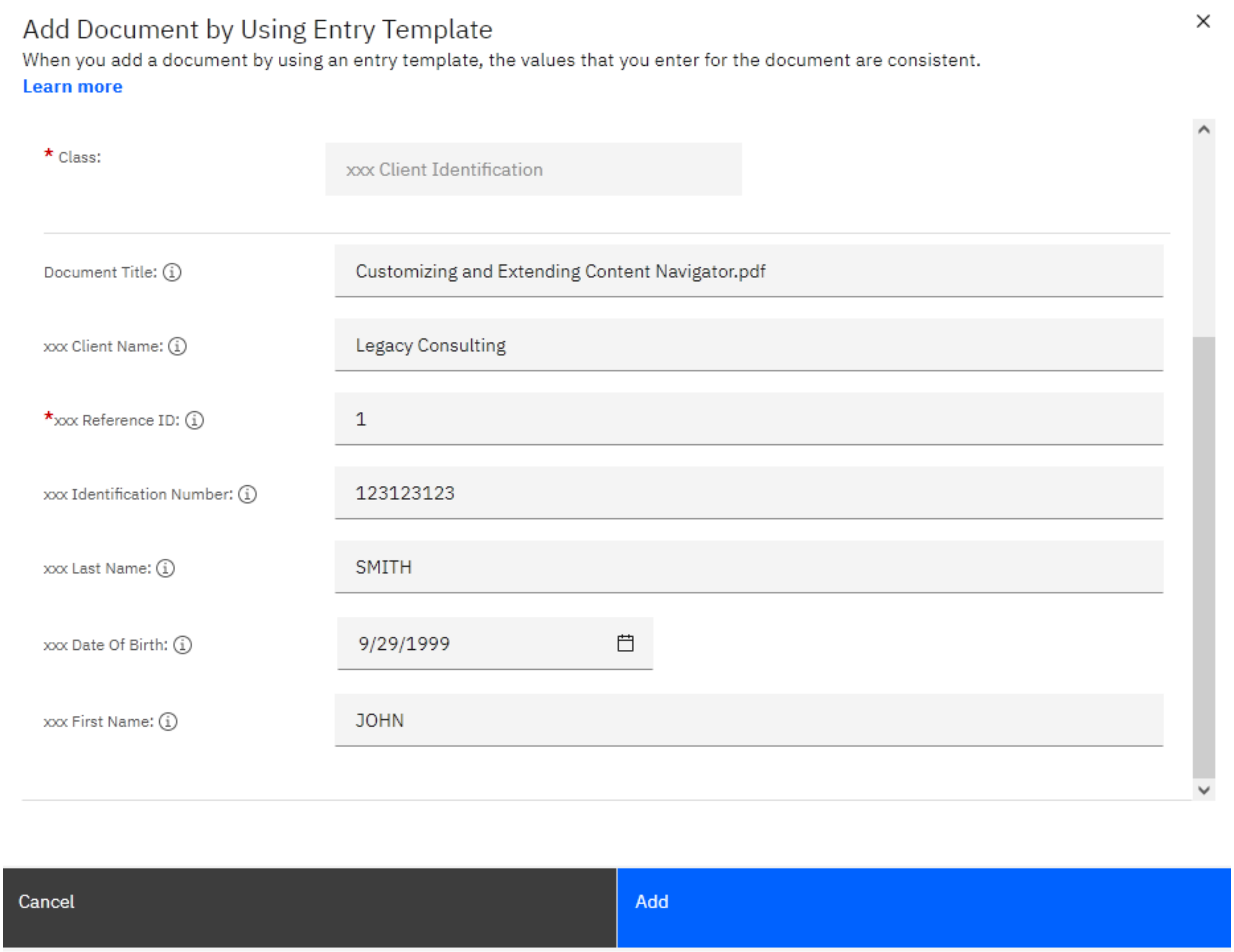
Steps:

_1. Using the browser, download the redbook "Customizing and Extending IBM Content Navigator" and from this URL: https://www.redbooks.ibm.com/redbooks/pdfs/sg248055.pdf. Also make sure you have downloaded the documents from the Lab Data folder.

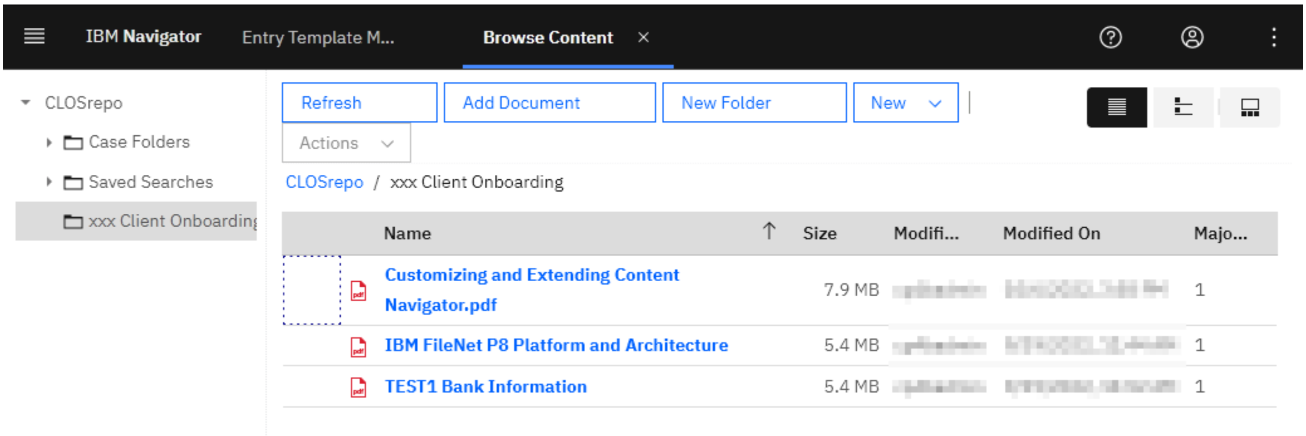
_2. From the Home Menu, choose the Entry Template Manager. Double-Click on the entry template "usrxxx Client Identification" which was created in earlier section as part of IBM Content Navigator lab, to start adding a document using that entry template



_3. Choose the file downloaded in step 1, provide the property values and click on Add button. The screenshot below is only showing the bottom part of the entry template dialog.

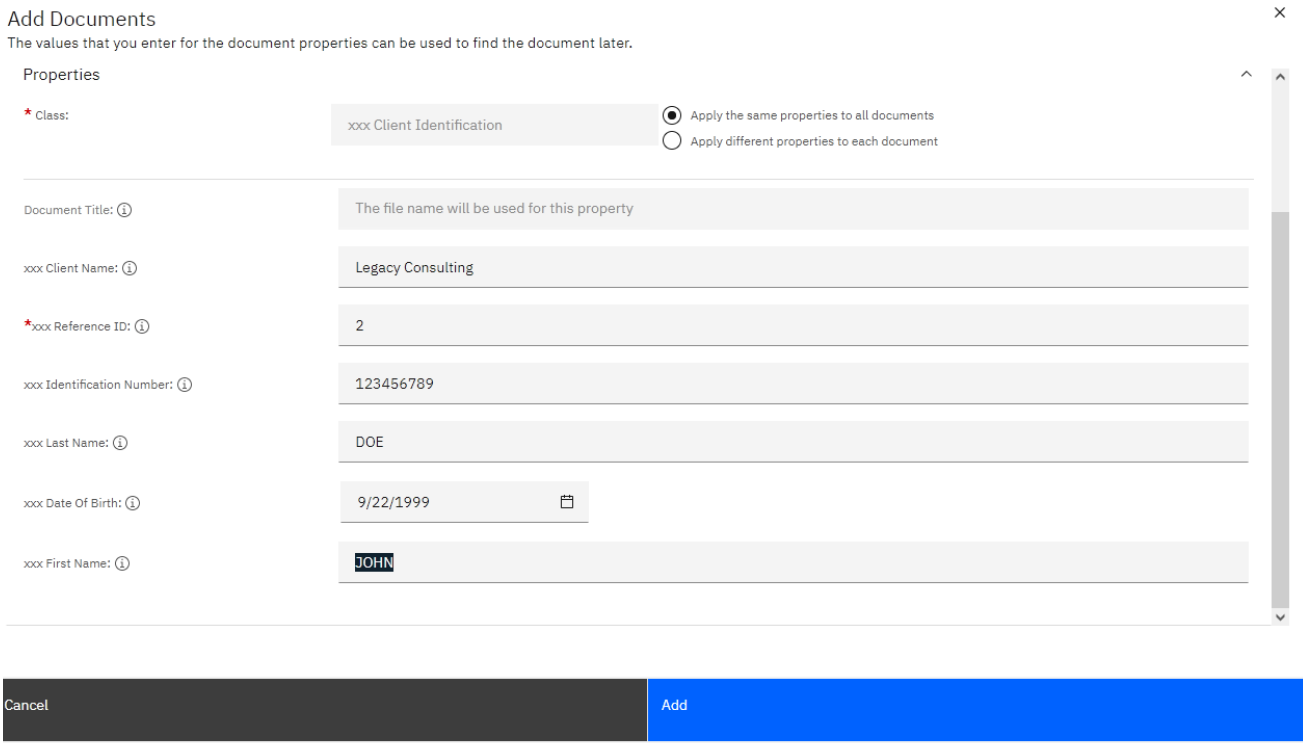


_4. Open the Home Menu and choose “Browse Content” again. Navigate to the folder “usrxxx Client Documents. Note that the folder content now contains the newly added document too.



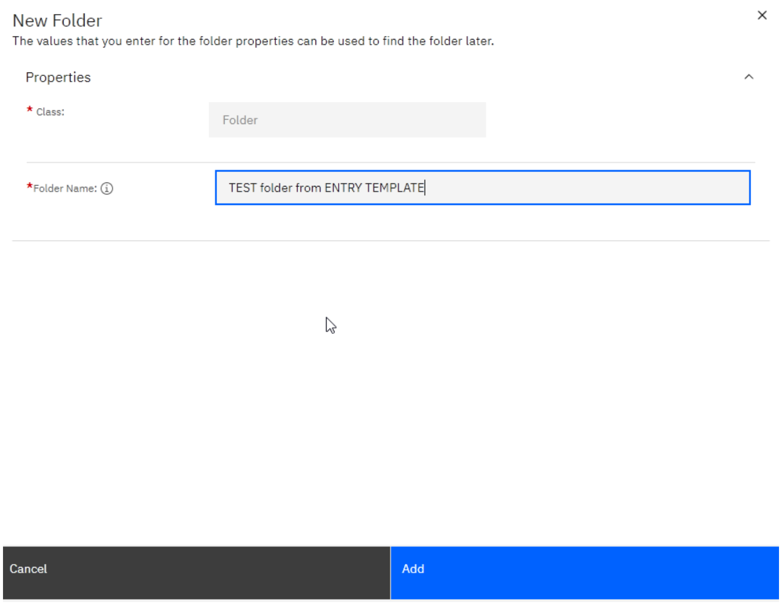
_5. From a folder on your local computer containing the files from the lab data folder, and the Redbook downloaded earlier, select both files and use drag & drop to move them into the IBM Content Navigator browser window.

The entry template is used to upload both documents in one interaction now. The document class, and the security settings have been preselected, and the security settings also hidden. Supply the property values as in below screenshot, and leave “Apply the same properties to all documents” selected. Click on Add and observe that the documents are uploaded in the background, the user can continue working.



The order of the property values might be different.

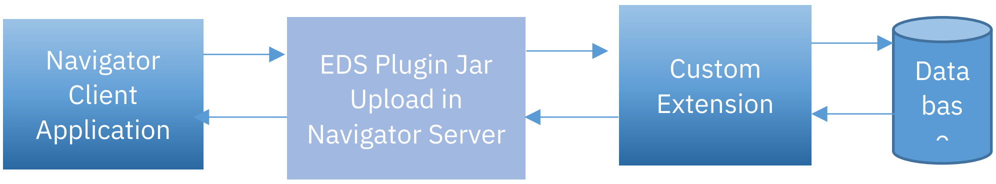
_6. In the same way, the Folders can be created by either clicking the “New Folder” button. As only one Folder entry template was associated with the “usrxxx Client Documents” folder, it is automatically invoked when the “New Folder” button is pressed. Click on “New Folder” to add a folder, provide a sample folder name, and click on “Add” to add the folder.



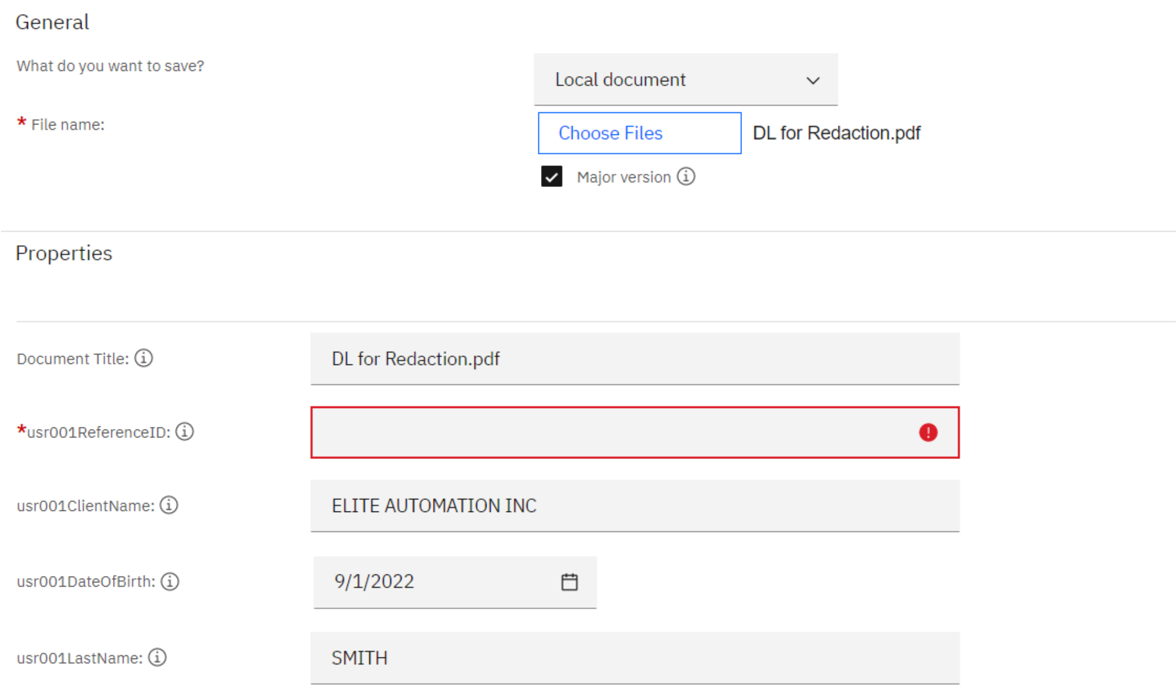
5 Exercise (walkthrough): External data services

5.1 Introduction

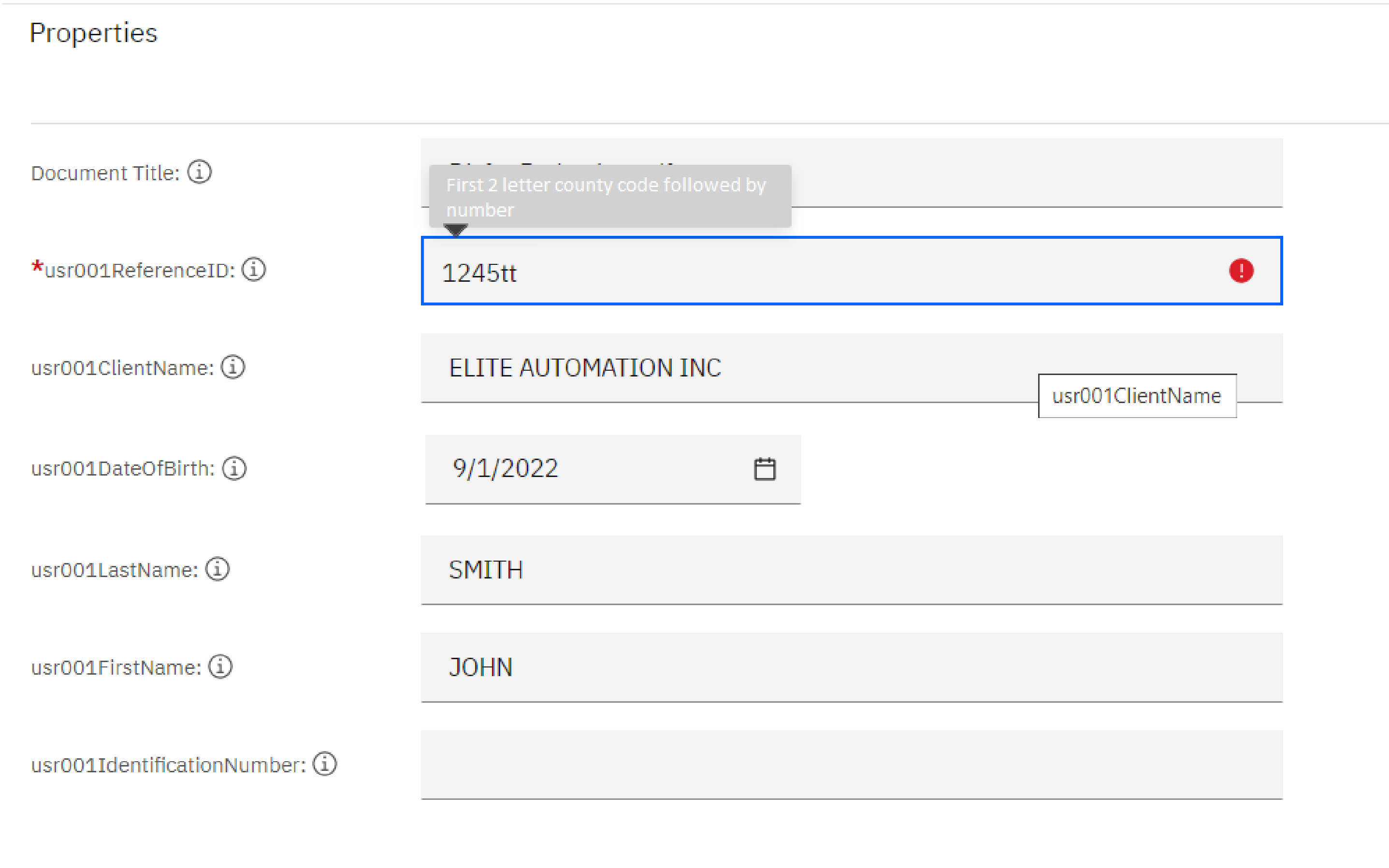
External Data Services (EDS) is a feature available in IBM Content Navigator and Business Automation Workflow. The idea is to allow using an external data source such as a database to provide allowed values for properties. It can also be used for a number of further use-cases, like dependent property values, custom validity checking, and so on.



As an example, this informative Exercise introduces the reader to one aspect of using EDS, which is how to validate properties while adding a document. One of the properties of the “Client Information” document class is the Reference ID. The Reference ID property had been marked as required in an earlier exercise, leaving it empty will result into a warning, see below.



The example external data service will validate user input on it and enforce property formatting when adding a document. It uses a regular expression in the custom extension code to limit allowed values to a two-letter country code followed by 3 digits. If the EDS service is used, a validation error will be shown, if the property is left empty or if the value is not matching the right syntax. see below screenshot for example.



Below sample EDS plugin code uses 2 java classes (GetObjectTypes and UpdateObjectTypeServlet), a json file (ObjectTypes.json) and the build.xml file to compile and build the EDS plugin for above usrxxxReferenceID property validation example

Process Flow for Creating EDS custom plugin.
The EDS process is simple and has just 2 quick steps:

1. Get the list of Objects to validate
2. Call the validation routine when one of the listed objects is accessed.

_1. **Get the list of objects**: GetObjectTypesServlet.java

The first step in the development process is to tell IBM Content Navigator which object types to validate. ICN will call the GetObjectTypes servlet java class and expects a JSON array with the set of objects to validate using (ObjectTypes.json) json data file. For this sample, just the Classname of the Object Class, as defined in ACCE. In the more general case, this might depend on the Object Store name, which is passed as a parameter (repositoryId).

Below example shows how to enable EDS for objects of the class object type "Client Document."

Code snippet for step 1:

```
@WebServlet(name = "GetObjectTypesServlet", urlPatterns = { "/types" })
public class GetObjectTypesServlet extends HttpServlet {

protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
      String repositoryId = request.getParameter("repositoryId");
      //Return a JSON response with the Object Class
      String fullResourceName = "com/ibm/ecm/sample/edsds/data/ObjectTypes.json";
      logger.logDebug(this, methodName, request, "Attempting to load resource: " +
            fullResourceName);

      InputStream objectTypesStream =
            this.getClass().getClassLoader().getResourceAsStream(fullResourceName);
      if (objectTypesStream == null) {
            throw new RuntimeException("Unable to load the data file.");
      }

      JSONArray jsonResponse = JSONArray.parse(objectTypesStream);
      logger.logExit(this, methodName, request, "Returning: " +
             (jsonResponse != null ? jsonResponse.toString() : "null"));
      return jsonResponse;
} // of doGet
} // of class GetObjectTypesServlet
```

ObjectTypes.json file:

```
[
{"symbolicName": "usrxxxClientDocument"}
]
```

_2. **Implement custom validation**: UpdateObjectTypeServlet.java

The IBM Content Navigator plugin will call the validation routine when the user interacts with an object of the specified object type and will provide the current property values as a JSON object.

The JSON object has 3 main sections:

1. Information about the Request
2. Information about the Object
3. Information about the User

Code snippet for step 2:

```
@WebServlet(name = "UpdateObjectTypeServlet", urlPatterns = { "/type/*" })
public class UpdateObjectTypeServlet extends HttpServlet {

    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {

        String objectType = request.getPathInfo().substring(1);

        // Get the request json
        InputStream requestInputStream = request.getInputStream();
        JSONObject jsonRequest = JSONObject.parse(requestInputStream);
        String requestMode = jsonRequest.get("requestMode").toString();
        String objectId = jsonRequest.get("objectId").toString();
        String repositoryId = jsonRequest.get("repositoryId ").toString();

        JSONArray requestProperties = (JSONArray)jsonRequest.get("properties");
        JSONObject clientContext = (JSONObject)jsonRequest.get("clientContext");
        String userid = (String)clientContext.get("userid");
        String locale = (String)clientContext.get("locale");
        String desktop = (String)clientContext.get("desktop");

                                        (to be continued)
```

Each request will have a **requestMode** specified to identify the context in which the validation routine was called:

1. initialNewObject and InitialExistingObject: The first step in the process and is called when an item – a document or folder, for example – is opened or created.
2. inProgressChanges: Is called when a user updates a value in the User Interface, if there are dependent properties.
3. finalNewObject and finalExistingObject: Indicates the final step in the process and is called prior to committing the changes to the server. To deny the commit request, return an error.

Force formatting of a specific property

To ensure all data is entered into the system correctly, the code enforces a specific format using regular expressions – this is done by using the request modes **initialNewObject** and **initialExistingObject** and returning the properly formatted JSON.

In the following example, the format of the Reference ID property is checked:

```
// Create an Empty JSON response and write your results here
JSONObject jsonResponse = new JSONObject();
responseProperties = new JSONArray();

if (requestMode.equals("initialNewObject") || requestMode.equals("initialExistingObject"))
{
     //ensure the Reference ID is in the proper format eg, US123
     // the reg-ex for this format ([A-Z]{2})(\\d{3})
     JSONObject temp = new JSONObject();
     temp.put("symbolicName", "ReferenceID");
     temp.put("format", "([A-Z]{2})(\\d{3})");
     temp.put("formatDescription", "<br><ul><li> First 2 letter country code followed by
number</li></ul>");
     responseProperties.add(temp);
     jsonResponse.put("properties", responseProperties);
}
PrintWriter writer = response.getWriter();
jsonResponse.serialize(writer);
```

Validate values prior to saving

Above example shows how to validate that the data is using the right format. A different kind of validity check might be, to check that the value of the reference ID is already defined in some external system. This can best be achieved by adding a check on the **finalNewObject** and/or **finalExistingObject** request modes. We assume here that e.g. all reference IDs but the referenceID US123 be valid, just as an example, instead of looking up on any external system.

The input JSON object contains all property values in the requestProperties JSONArray. It was obtained by extracting the property “properties” from the request passed to the method doPost(), see above. To find the referenceID property the code has to loop through that array, as follows

The following example expands on the previous formatting check:

```
if (requestMode.equals("finalExistingObject") || requestMode.equals("finalNewObject")) {
    //The Incoming JSON will have the properties and their values in the requestProperties
array

    //  Loop through the properties and use simple name matching to find a property
    for( int i = 0 ;  i < requestProperties.size(); i++) {
        JSONObject requestProperty = (JSONObject) requestProperties.get(i);

        String propName = requestProperty.get("symbolicName").toString();
        String propValue = String.valueOf(requestProperty.get("value"));
        if (propName.equals("ReferenceID")) {
            if (!propValue.equals("US123")) {
                // the value does not match our simple rule, add an error message to the
return JSON
                        JSONObject temp = new JSONObject();
                        temp.put("symbolicName", "ReferenceID);
                        temp.put("customValidationError", "You entered an invalid
Reference ID number.");
                        responseProperties.add(temp);
            }
        }
    }
}
PrintWriter writer = response.getWriter();
jsonResponse.serialize(writer);
```

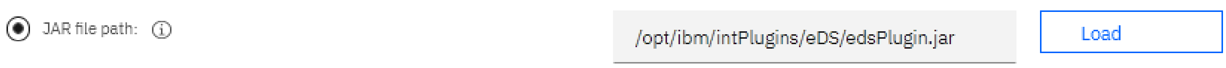
With these modifications, the sample EDS data source plugin is ready to be compiled, using e.g. an ant build from the Eclipse IDE. The final step is to let ICN know that it needs to call this customization. The administrator needs to proceed as follows:

1. Open your IBM Content Navigator admin desktop and navigate to the plug-ins section

2. Click "New Plug-in" button.

3. Select "Jar file path" and enter the path to the local externalAppServicePlugin.jar file, which is the result of the build process above. In a container environment, the plugin can be copied into a persistent storage volume which is mounted by ICN on path /opt/ibm/plugins. Then click "Load". Save and close this plugin.

4. Click “New Plug-in” button to create another plugin. For the JAR file configure the edsPlugin.jar file, which is located in the IBM Content Navigator Installation directory in the subdirectory “samples”. On a Container environment, the file is already present in the IBM Content Navigator container image with the name “/opt/ibm/intPlugins/eDS/edsPlugin.jar”, such as:



5. Click “Load” button and scroll to the bottom of the page. On the “External Data Service” section, select “Data Source Plugin” and select the Plugin which was created above. Click “Verify” to verify the configuration. Then click “Save and Close”.

6. Modify the desktop definition and configure it to load the new plugin.

For more information on how to create a sample EDS plugin refer to EDSDataSourceSamplePlugin Code.
EDS is further discussed in the documentation on these pages:
https://www.ibm.com/docs/en/content-navigator/3.0.x?topic=navigator-external-data-services
https://www.ibm.com/docs/en/content-navigator/3.0.x?topic=services-sample-external-data-service
https://github.com/ibm-ecm/ibm-content-navigator-samples/tree/master/edsDataSourceSamplePlugin
Registering and configuring an EDS plug-in to reference a custom EDS data source plug-in - IBM Documentation

6 Exercise: Search Content and Simple Search

6.1 Introduction

With the “Search Content” feature, Content, such as documents and folders can be searched. The search is done by specifying the root document or folder class, and limitations for the properties of the result content in search clauses. These search clauses can be combined with logical expressions, if multiple search clauses are needed, for example to find documents with a specific document title, created within the last month.

Furthermore, on each search clause different search operators such as equal, contains, starts with, etc. can be used, and a full-text search can be combined with the search clauses.

> Note that search performance depends on the properties being searched, the search clauses and the order. If you search for example for the “Document title” property, the search will be faster if for the “Document title” property an index had been defined in ACCE, and if the search clause specifies at least the first few characters of the result value. This means, that a “starts with” condition for a search clause might be computed much faster than the “contains” clause, even if an index is defined.

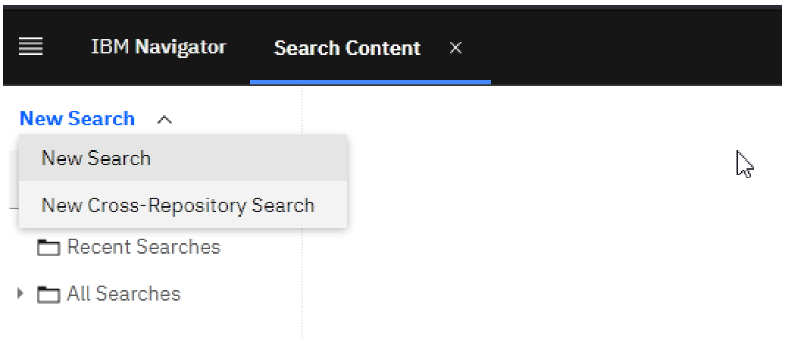
Search Content furthermore supports searching for content across multiple repositories. This is useful if the items are spread throughout multiple repositories. For example, a user might use a cross-repository search to look for client Document records in one repository and billing records that are stored in another repository, which might resemble the same kind of information, and display the result in a single result page.

6.2 Exercise Instructions

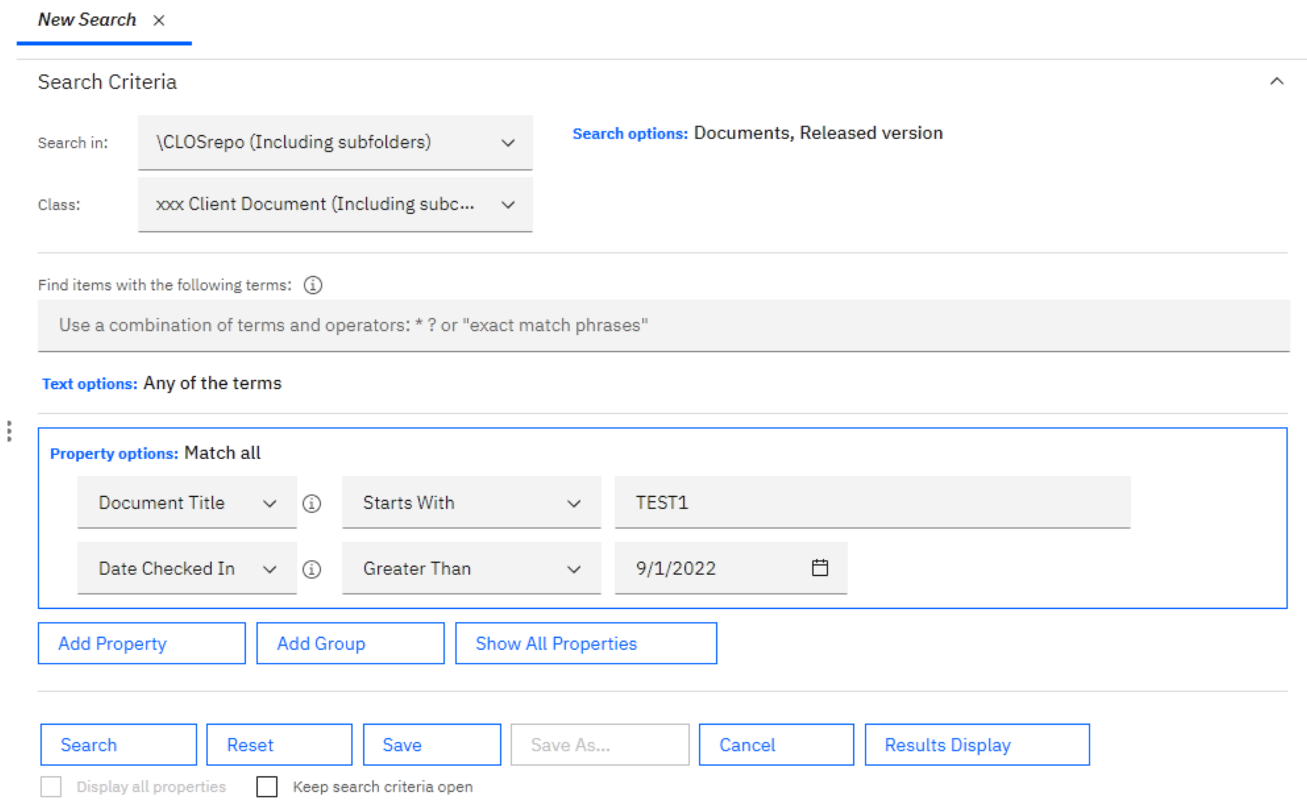
In the first part of this exercise, a search content will be demonstrated. The second part is dedicated to a second kind of search, the “simple search”. It allows to enter a search string and customize the result set by defining additional filter conditions.

6.2.1 Search Content

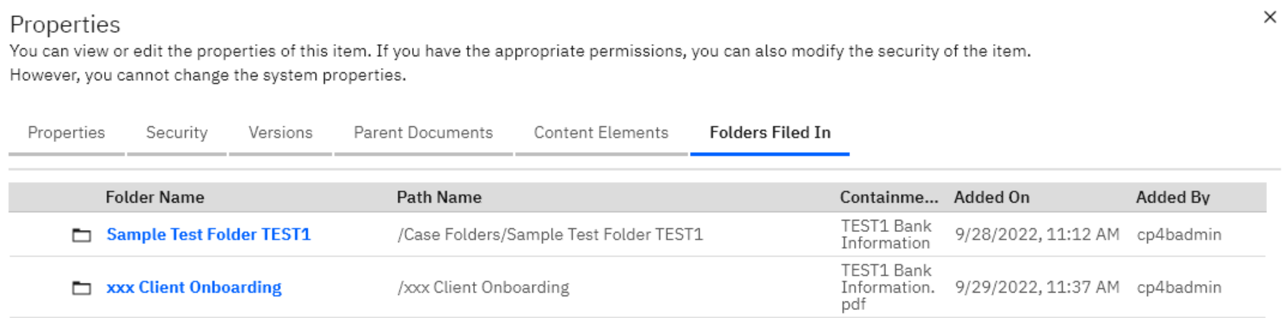
_1. From the Home Menu on top left corner, select “Search Content”. The “Search Content” tab opens. From the “New Search” pulldown menu, select “New Search”



_2. On the new Search, select the “usrxxx Client Document” document class, and select search options as outlined in below screenshot. Press “Search” to search matching documents. When selecting the search class, note that its also possible to search in multiple document classes.



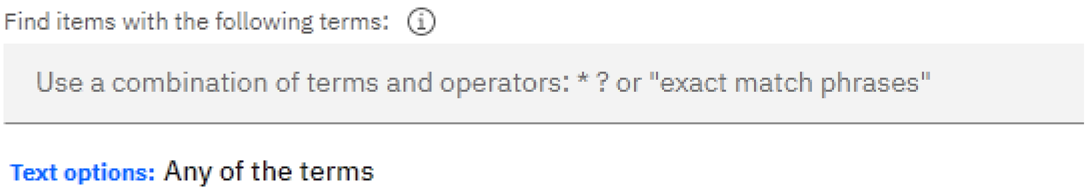
_3. There should be one result document. Right-click on the result document and select “Properties”. On the property window for the result document, select the “Folders filed in” tab.



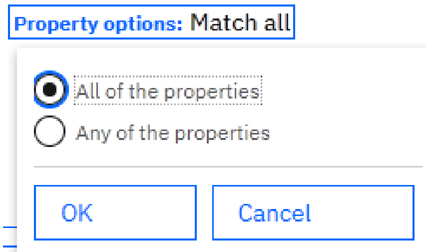
> As the document was using the Reference ID “TEST1”, the subscription defined in the Lab 1 : “Setting up FileNet Content Platform Engine for Automation Projects on Cloud Pak for Business Automation” has filed the document automatically in a case folder.

_4. Click on the “usrxxx Client Onboarding” folder and observe that you can open the Browse Content feature with that folders content, from this shortcut. Close the “Browse Content” and get back to “Search Content”. On the Search Content, fold the “Search Results” by clicking on that section, and open the “Search Criteria” again and review its content:

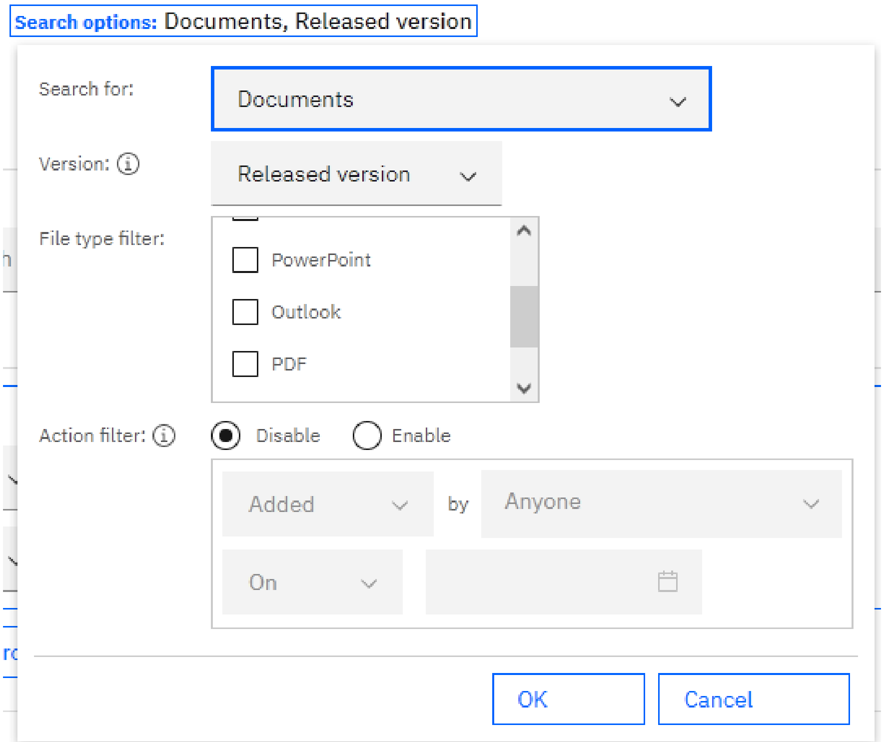
_5. Review that there is a section where you can configure full text search options. Using the blue “Text options” below the entry screen, full text search options can be configured.



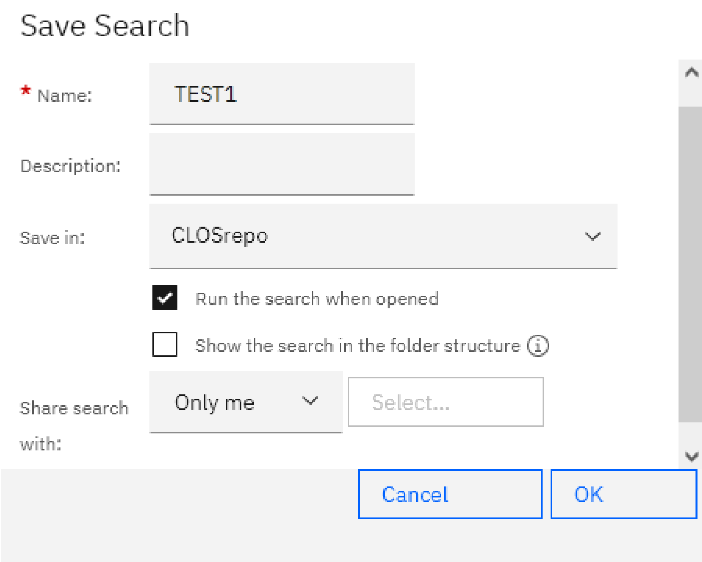
_6. Review that you can switch the default setting for searching all criteria, to search any criteria, by clicking on the title.



_7. Click on "Search Options" above and notice that it's possible to specify, if also older versions of the documents should be searched, and what kind of document to search.



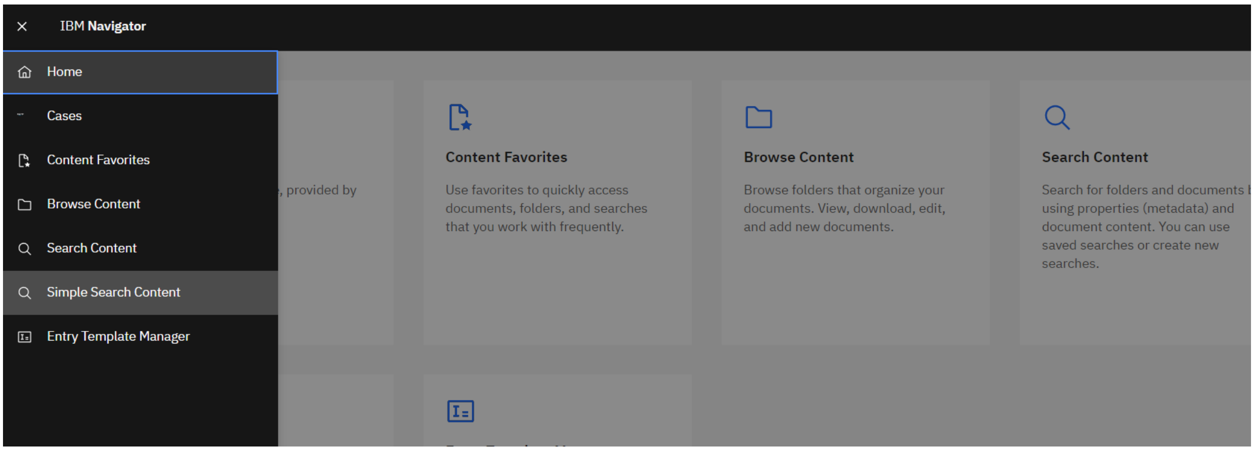
_8. Click on "Save" to save the search for later re-use. Leave the "Share save with" configured as "Only me".



The new search will be listed on the navigation area on the left side.

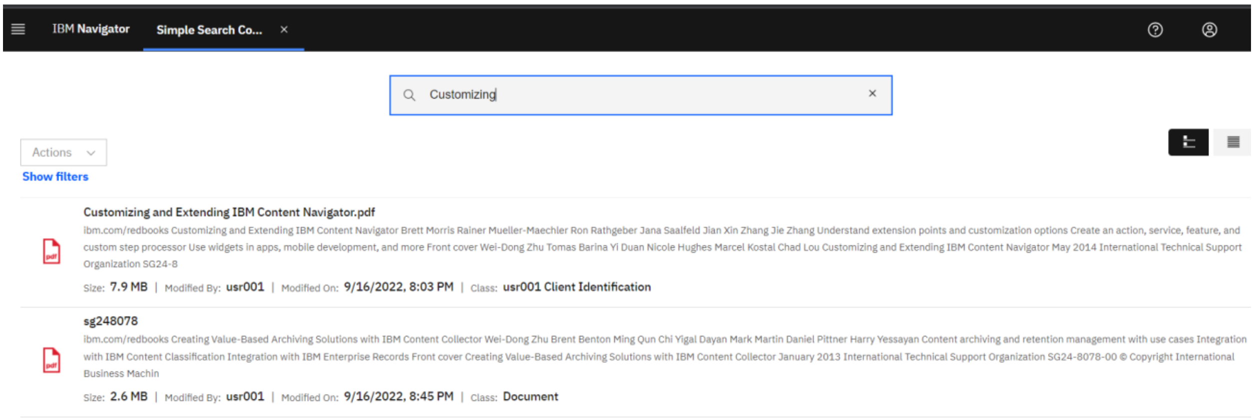
6.2.2 Simple Search

_1. Log in to navigator desktop and click on Simple Search Content as shown in below screenshot



> The last five queries are automatically saved and can be viewed by clicking the search box or pressing the down-arrow key while focus is on the search box. A list will only show up if prior searches were done by the user
>
> When the search box is empty, a hint is displayed in grey in the search entry field. The hint “Search content” is displayed if a full text search is available.

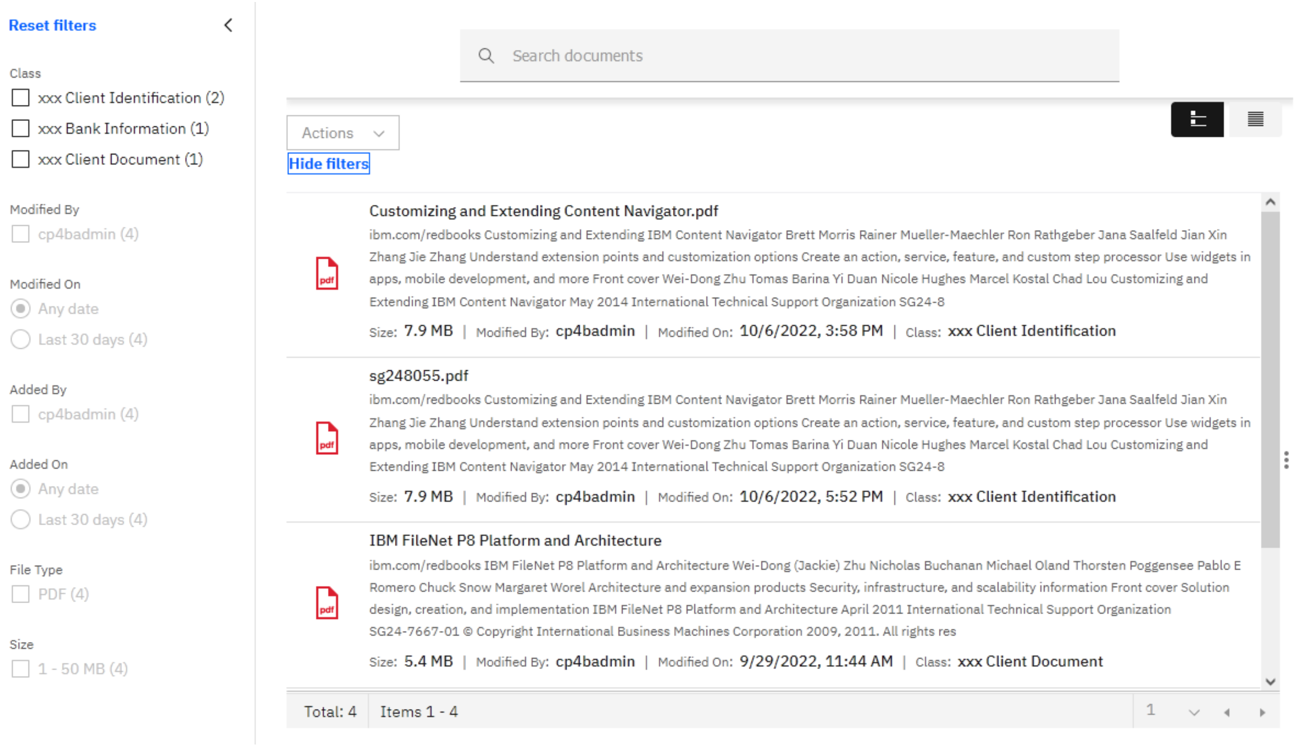
_2. Type the word “Customizing” into the search entry.



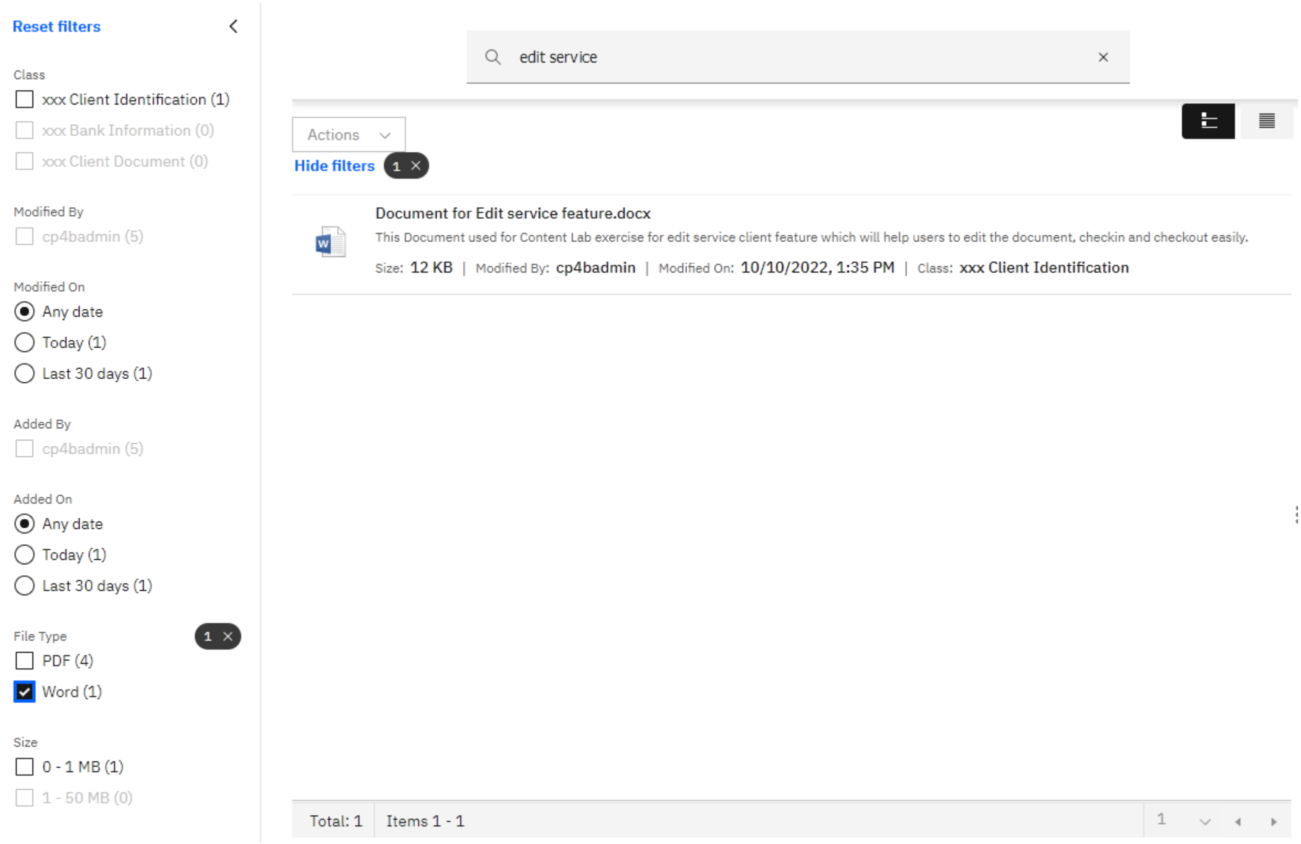
Administrators can update the repository configuration to set the maximum number of results that are returned by the query. This is done on the Search tab of the repository configuration, via the field “Number of Simple Search results”. Also, a timeout to limit long-running queries can be set. On the desktop definition on the “General” tab, the file type filters can be configured. The File type filters define the filter options.

> When documents in the search results are updated or deleted, the filters are scanned. The modified documents are assessed for not matching the filter options that they did when the search was first run.
>
> If any document gets out of sync with the filters, **users are notified and given the option to reset the filters**. User can select to continue to use the stale filters until they are reset, or a new search is run. Any filters, which were selected at the time the filters became out of sync, are not reapplied to not interrupt the users workflow. For example, user can continue changing the filtered documents even if they no longer match the filter criteria.

_3. To access faceted search filters, click Show filters. The user can filter by Class, Modified By, Modified On, Added By, Added On, File Type, and Size. File Type filter options are driven by IBM Content Navigator’s configurable file types, which allow users to add options that reflect the type of documents they work with as shown in below screenshot. If all matching documents share a single value for any specific search filter, the filter option is still displayed but disabled.



_4. User can search for keywords “edit service” and use a File Type Filter for “Word” documents to find the word document.



This document will be used in the next exercise on Edit Services.

7 Exercise: Creating favorites

7.1 Introduction

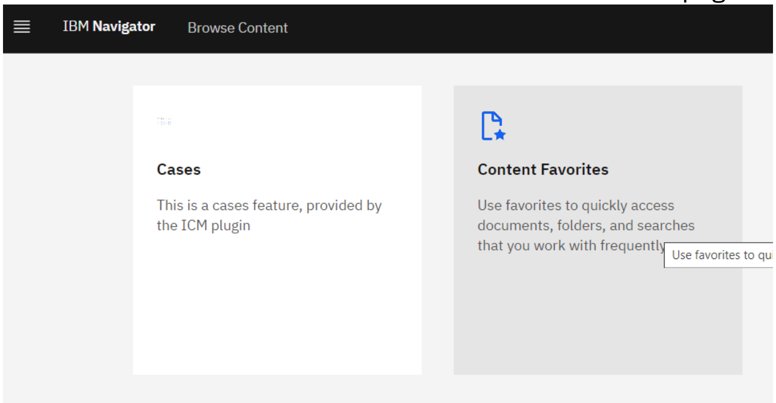
User can create favorites to quickly find the items that they work with frequently. Favorite items are added to the favorites view in the web client and in IBM Content Navigator for Microsoft Office. To create a favorite, select an item on the repository and click Add to Favorites.

7.2 Exercise Instructions

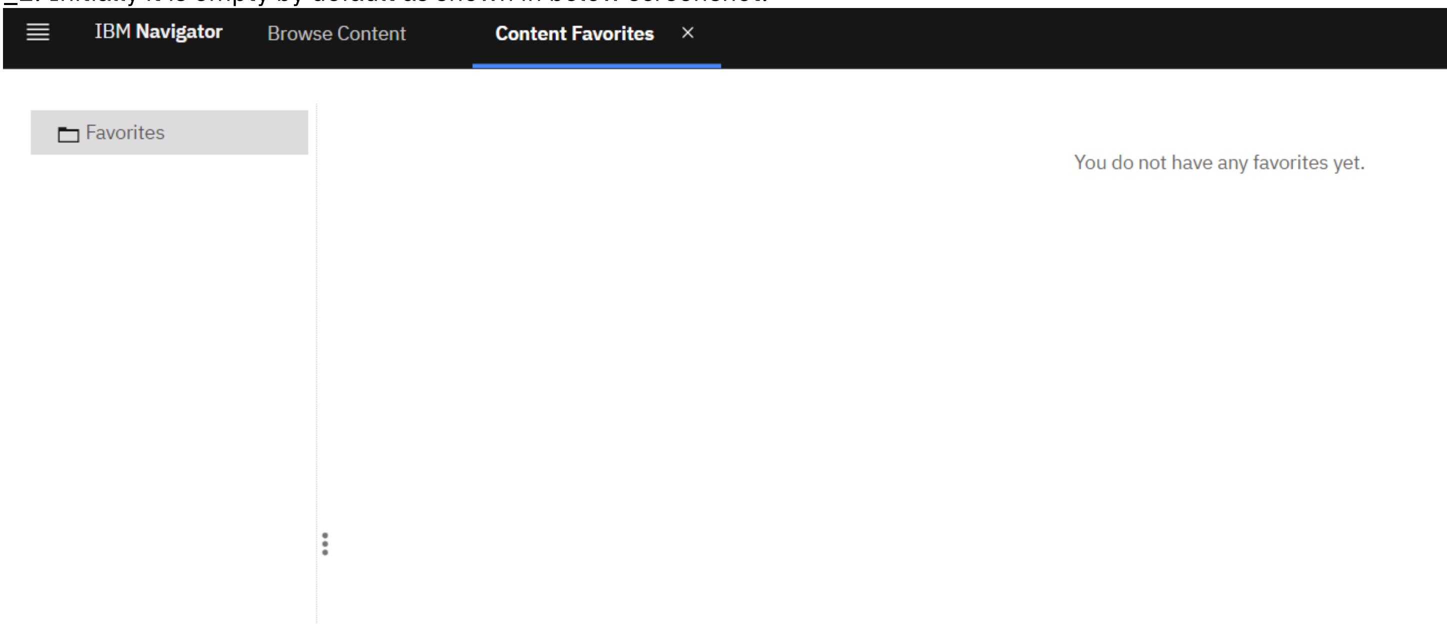
In this lab exercise the user can see how to add favorites on content favorites screen and how it will help to navigate on routine work in faster way.

Content Favorites

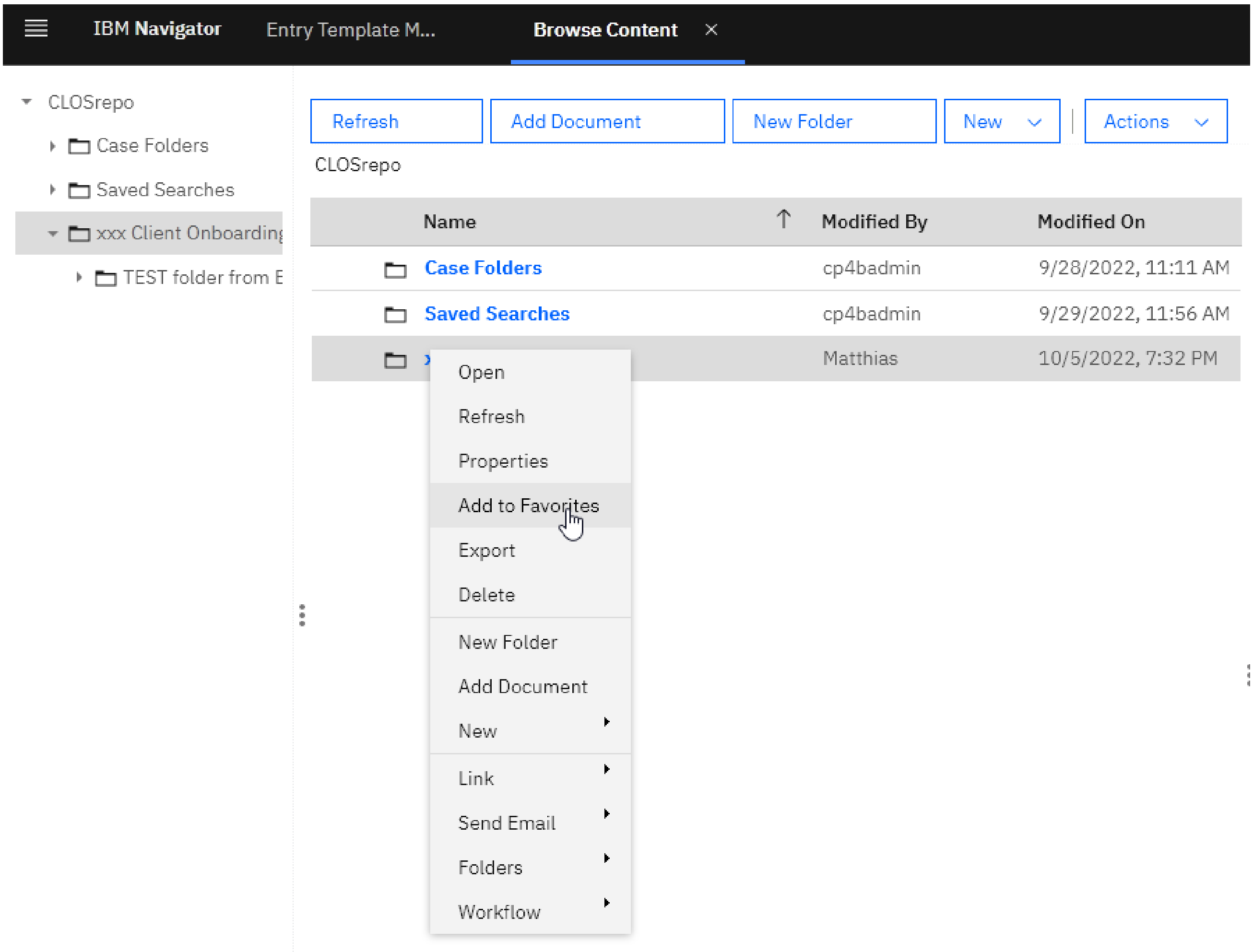
_1. See below screen when logged in the navigator desktop and then click on content favorites from home menu item or on the content favorites chiclet from home page.



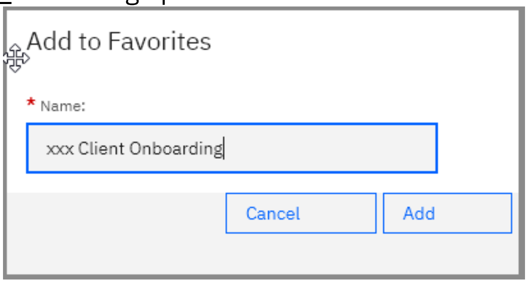
_2. Initially it is empty by default as shown in below screenshot.



_3. Add a document or folder to the favorites by right clicking on the folder on the right-side page and then select Add to Favorites as shown in below screenshot.

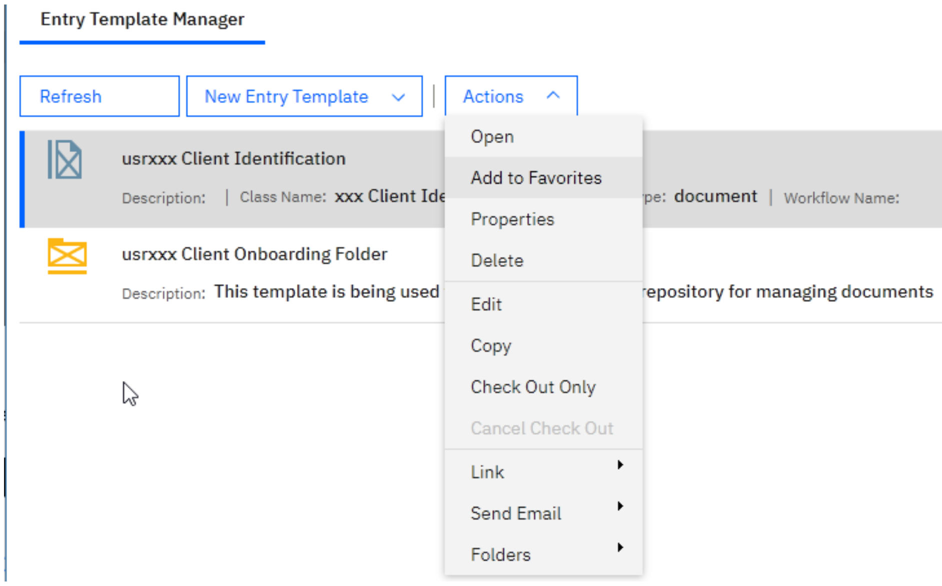


_4. A dialog opens as below to save the folder as favorite, allowing customization of the name.



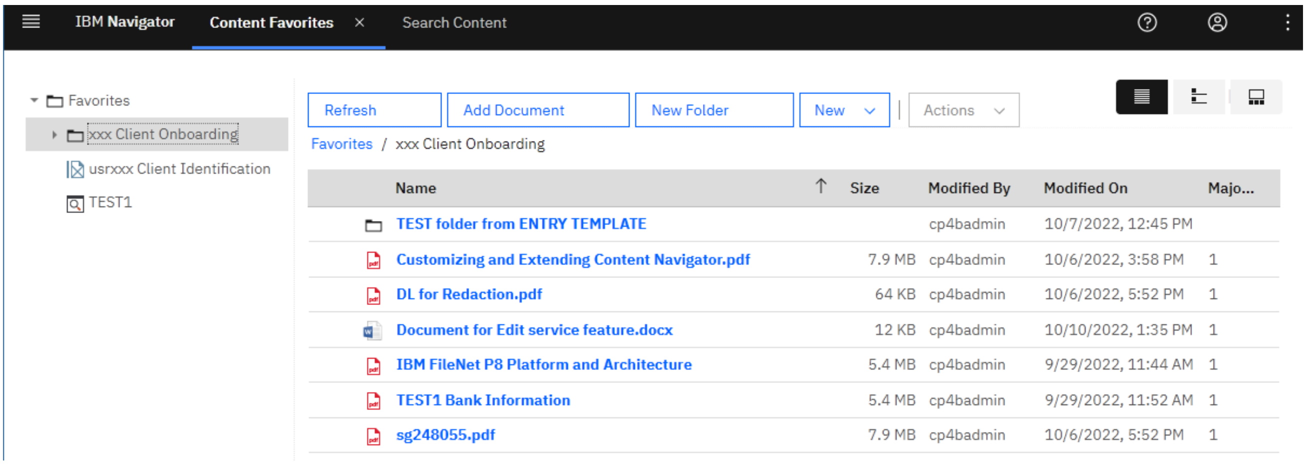
_5. Notice the yellow star in front of the folder name, after adding the folder to the Favorites page.

_6. You can also add the entry template from the entry template manager to the Favorites screen as shown below. Navigate to the Entry Template Manager, and select an entry Template, and select "Add to Favorites" from the Actions pulldown menu. Note again the yellow star in front of the name which indicates a favorite item.



_7. Try it out with the saved search too.

_8. Go back to the Content Favorites screen from the home menu and see the newly added Favorite items. Use these favorites to quickly access often used items without having to find them on the other tabs in the IBM Content Navigator desktop.



8 Exercise: Content Redaction using IBM Daeja Viewer

8.1 Introduction

In this exercise participants are going to learn about content redaction, annotations, and the merge & split feature from Daeja viewer. The redaction feature allows to protect content like Personal Sensitive Information data (Names, SSN, Email, and IP address etc.) and sensitive personal information Biometrics, Genetic information for the viewers without a need to know. It is available in two modes. Both, the Permanent Redaction feature, and the Role-based Redaction feature are available from DaeJa viewer. The Permanent Redaction feature achieves the redaction by creating a new redacted version of the document. In this exercise a permanent redaction is placed.

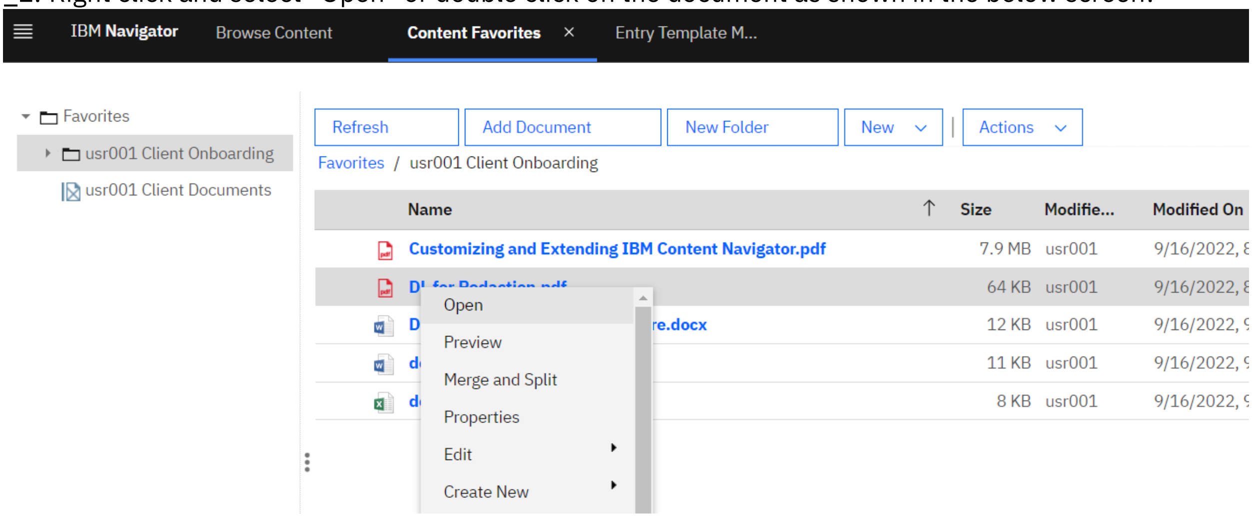
Role-based redaction allows to create redactions which display different redactions of the same document depending on the role of the user. They are created by placing a black rectangle annotation on the sentitive data and selecting a redaction reason. The redaction reason, and the role specification which indicates, which users can place redactions, and which users are able to see the sensitive data in spite of the redaction being placed, are made on the IBM Content Navigator Administration desktop, see https://www.ibm.com/docs/en/content-navigator/3.0.x?topic=components-configuring-role-based-redactions-filenet-p8-repositories for details.

8.2 Exercise Instructions

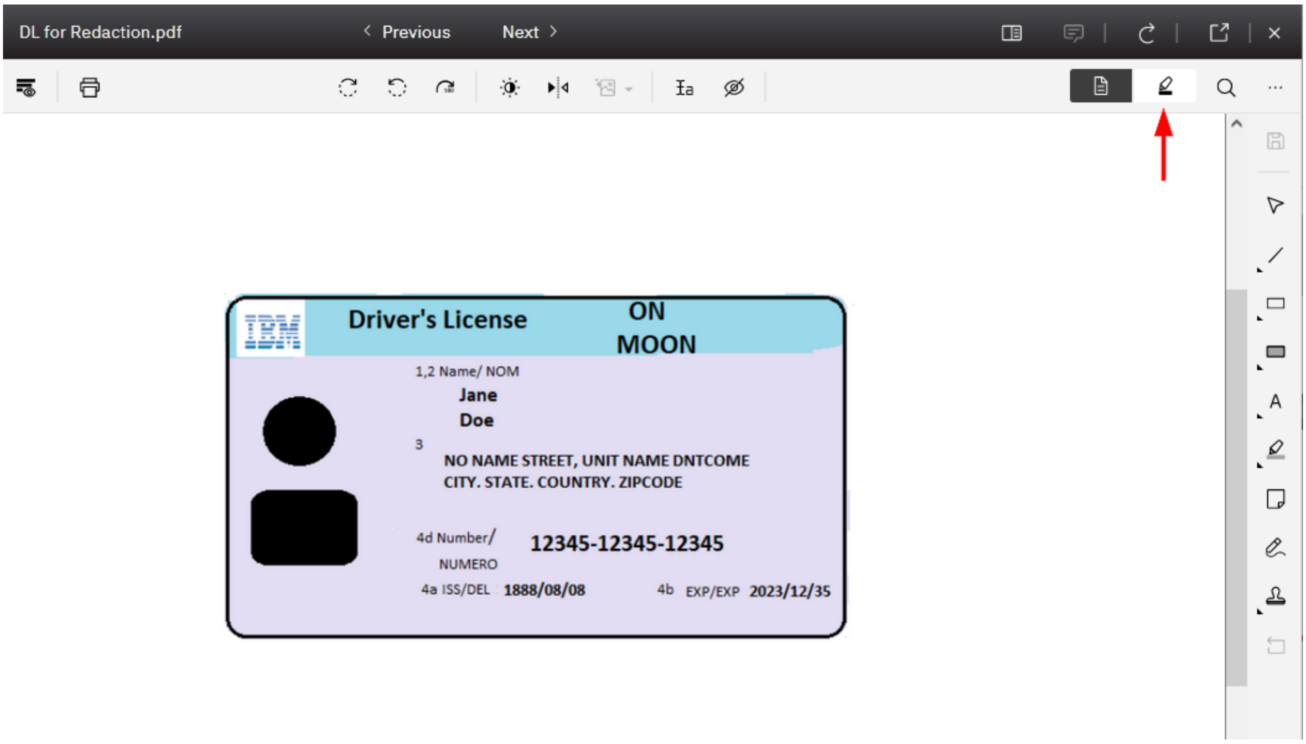
8.2.1 Permanent Redaction

_1. Once logged in to IBM Content Navigator desktop, navigate to the Content Favorites screen or Browse Content screen. Find the document named “DL for Redaction.pdf”.

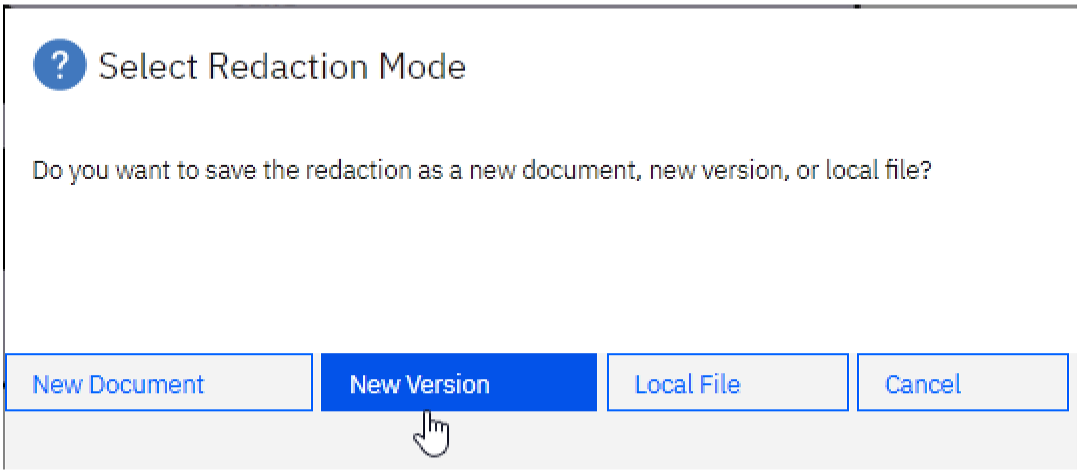
_2. Right click and select “Open” or double click on the document as shown in the below screen.



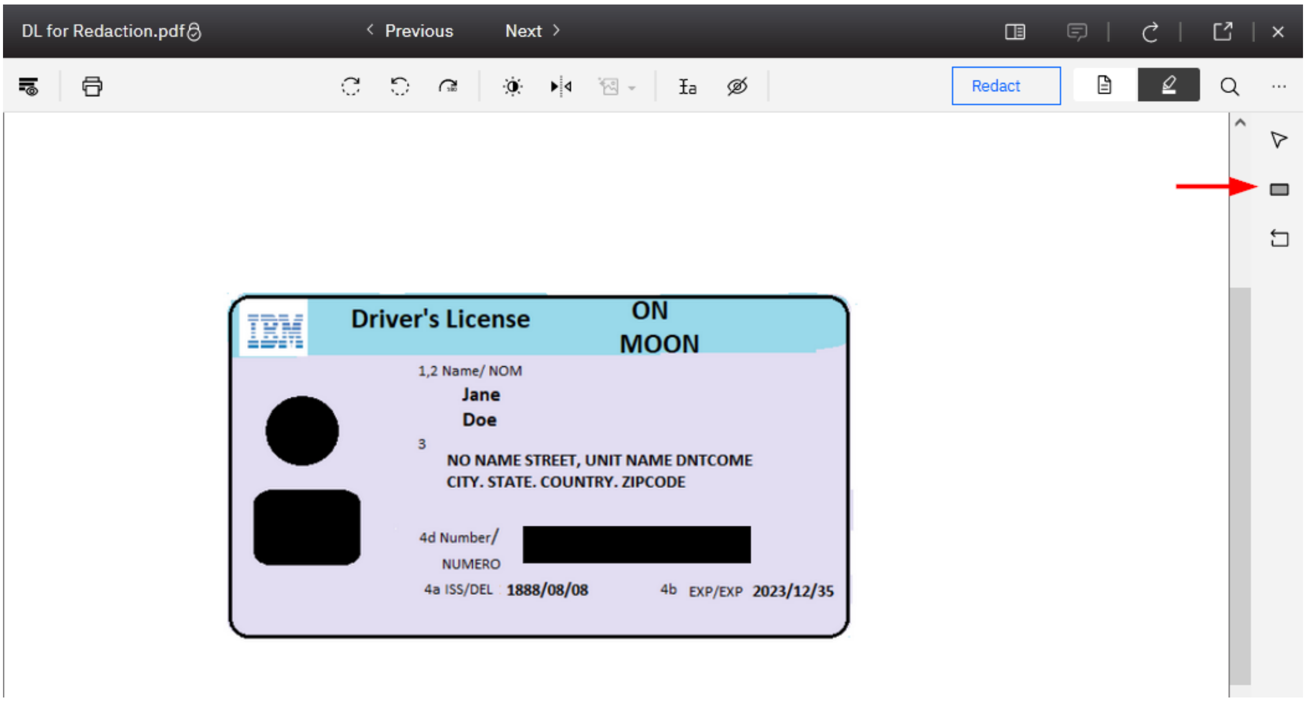
_3. The document will open in the Daeja viewer as shown in below screenshot. Find the redaction mode options and the buttons to black out sensitive data as indicated in the screenshot. The Redaction Mode options allows to switch between Permanent Redaction mode and Normal Annotation mode. While the black rectangle Annotation can be deleted again, the Black rectangle Redaction is permanent and cannot be deleted.



_4. Switch to permanent redaction mode by clicking the indicated icon above. A popup window asks how to save the new permanently redacted document version. Select “New Version” to store it in the same FileNet Content repository as a new version of the document.



_5. Select the blackout icon and hide the sensitive data of DL Number as shown in below screenshot.



_6. Click on the “Redact” button to permanently store the redacted document as a new version. Then select normal annotation mode again.

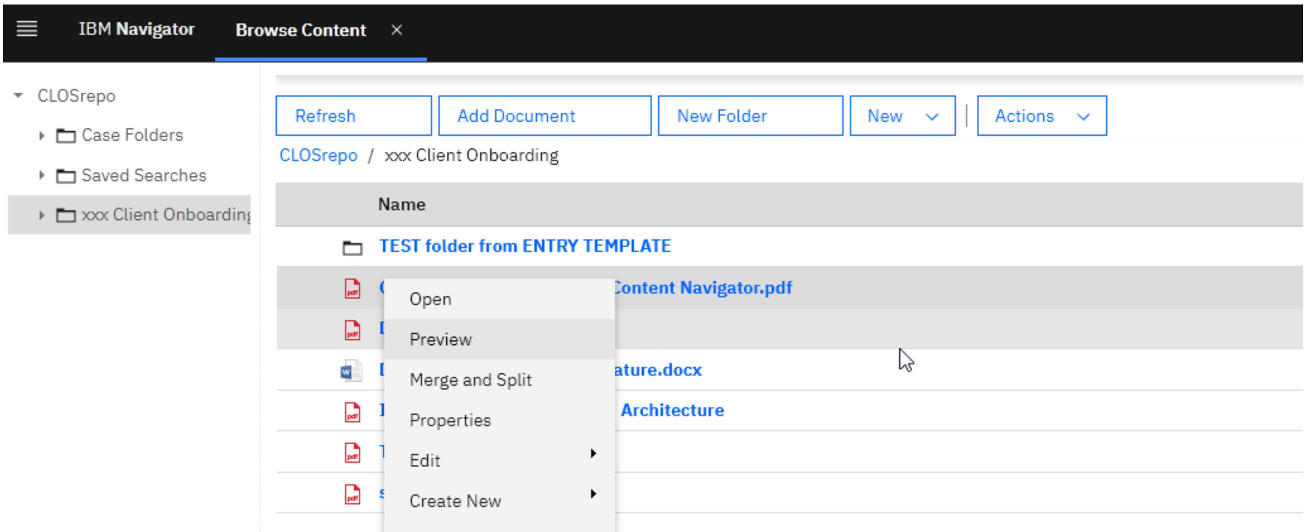
8.2.2 Merge and Split

For documents in FileNet content Manager, users can rotate, cut, and paste or copy one or more pages from existing documents to a new document or an existing document. When merging and splitting documents has been done, the new or updated documents can be saved back into the repository.

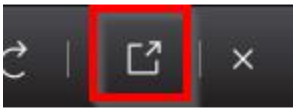
> All the documents that are being used on a Merge & Split operation must be from the same repository. For example, if you cut a page from document A, copy a page from document B, and paste them both into new document C, document A and B must be from the same repository and document C will be saved into that same repository too.

Merge and Split exercise steps:

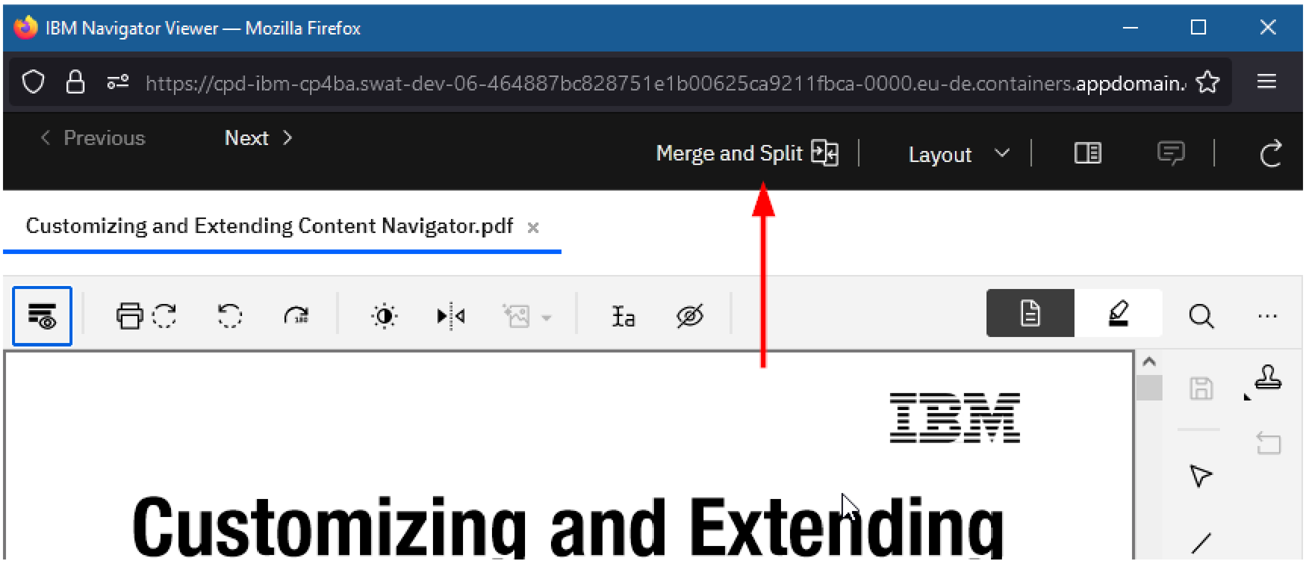
_1. Open the multi pages document from the Browse Content and content favorites screen as shown in below screen. Make sure open the document which have at least 2 or more pages.



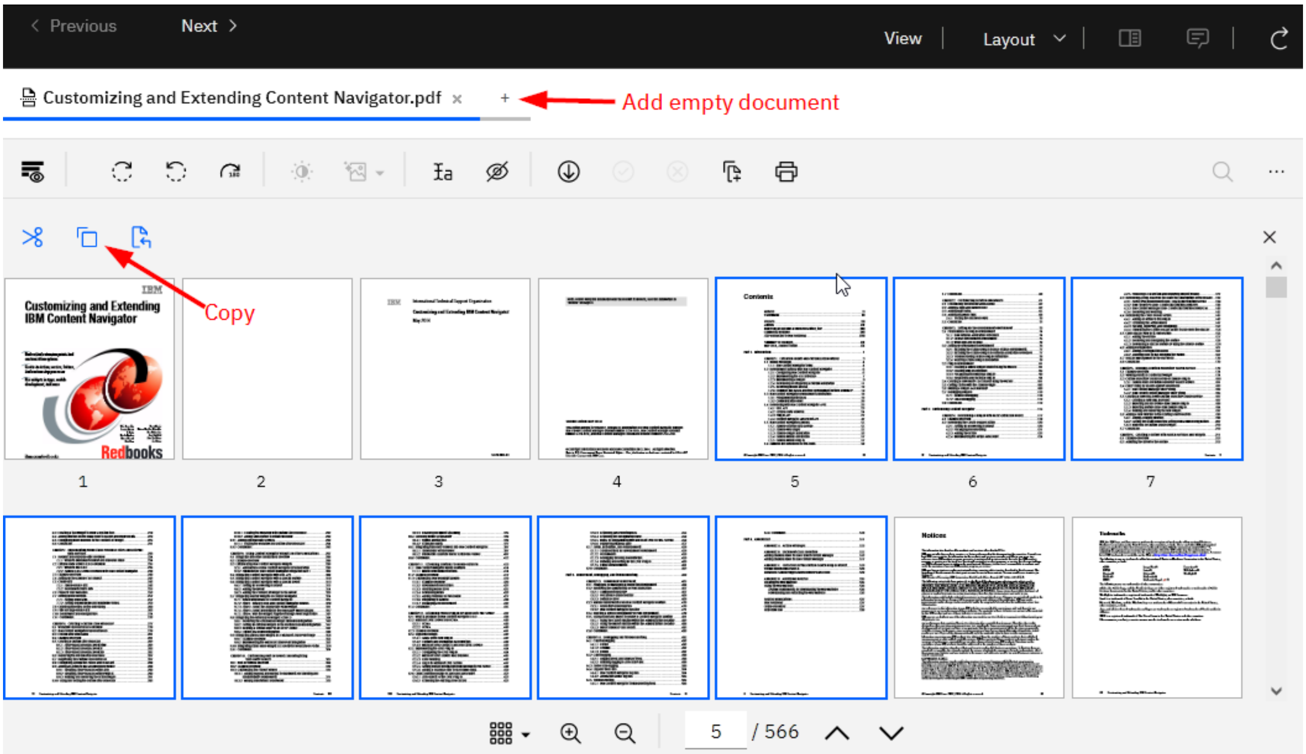
_2. The Merge and Split button is only available, if DaeJa Viewer is displayed on its own browser window, which is not the case in the default configuration. On the opened document, click on the “Open in new window” button in the top right corner.



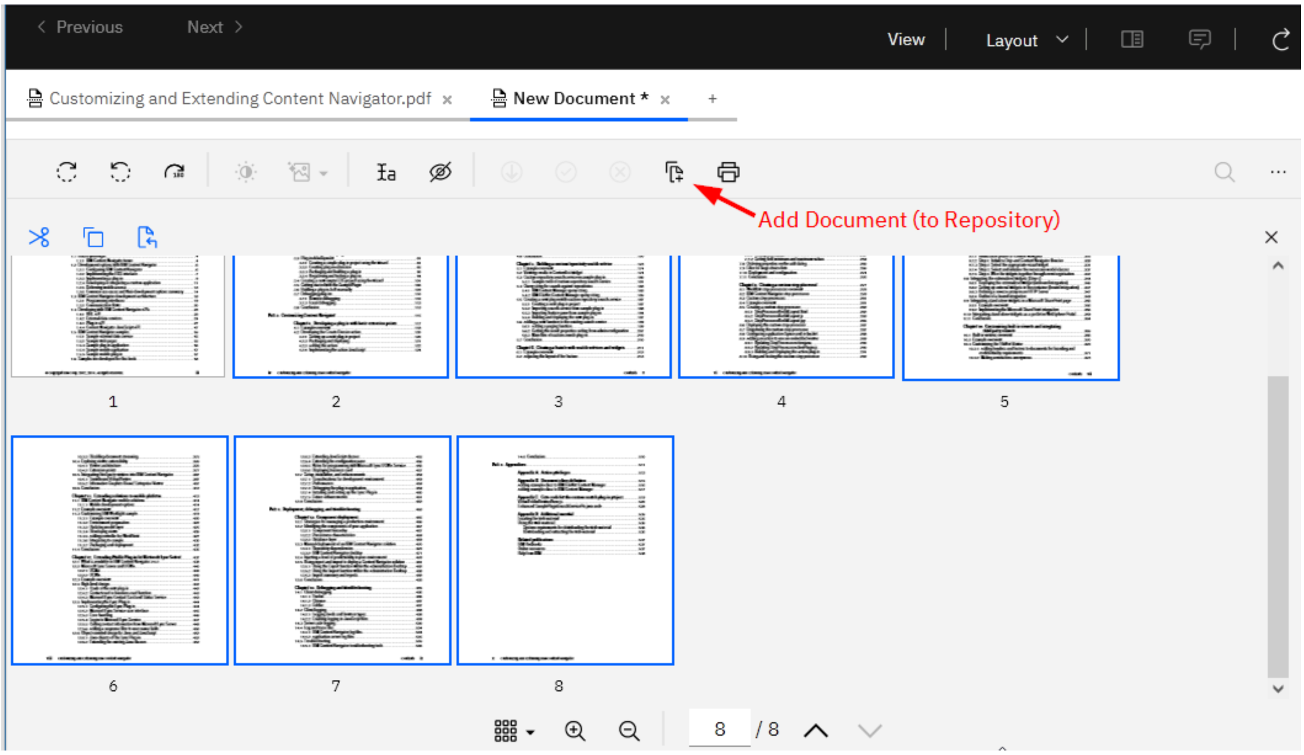
_3. Click on the merge and split button on the top right corner as shown in below screen



_4. The thumbnail view opens showing many pages on one screen. The size of the thumbnails can be increased or lowered by using the buttons on the bottom middle of the page. Try selecting all the table of content pages, for example, by clicking on the first page, then pressing Shift button on the keyboard, and clicking on the last page.

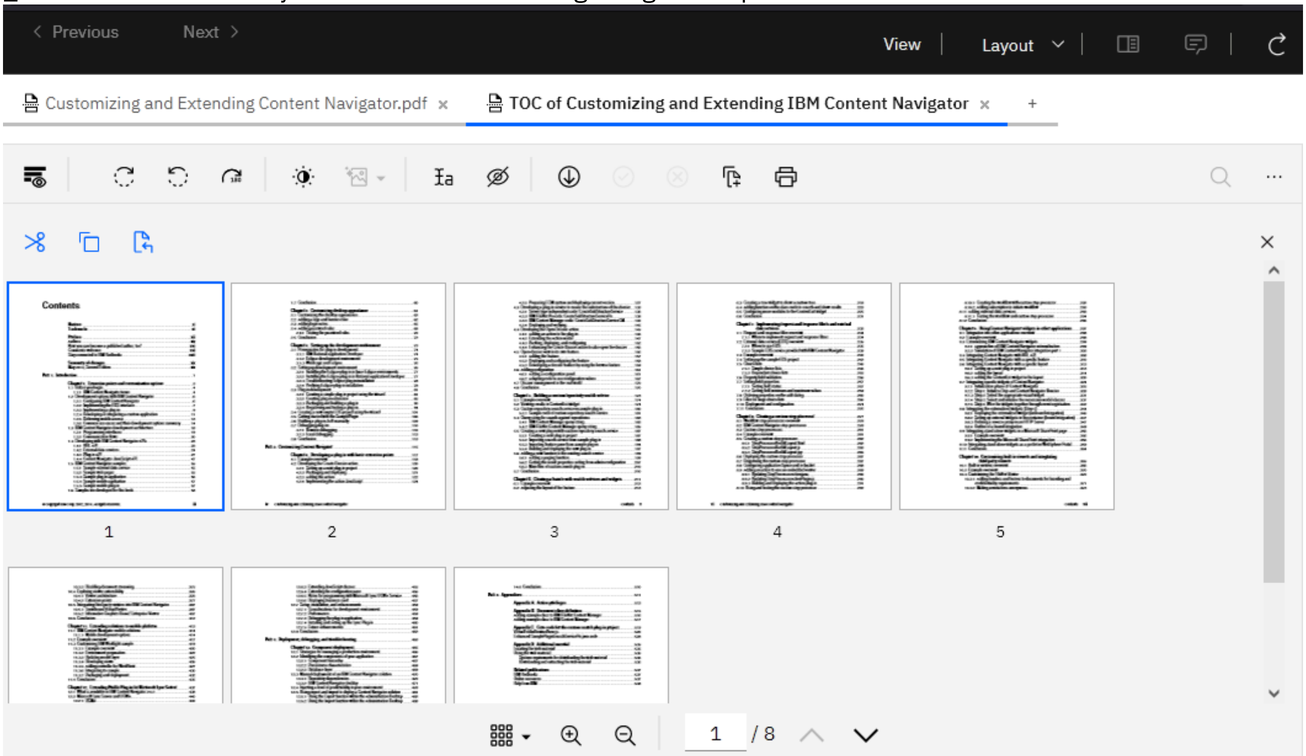


_7. Then press the “Copy” icon to copy the selected pages. Then click on the “Add Empty Document” icon to create a new document. On the new document, click the “Paste” icon (at the right of the Copy icon)



_8. Click “Add document” icon at the right side top corner to save the document. An Add Document dialog opens. Add a document title to it (e.g. the one suggested on the screenshot). Before clicking on “Add” please scroll down using the scrollbar, and provide at least a value for the Reference ID, e.g. “TEST1”.

_9. Users can see newly created document using merge and split feature.



Congratulations you have successfully completed IBM Content Navigator Lab. Hope you have enjoyed it.