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Preface

Oracle Fusion Middleware Integration Guide for Oracle Enterprise Repository describes how to configure Enterprise Manager, Oracle JDeveloper, VS .NET with Oracle Enterprise Repository. This guide also describes the Oracle Enterprise Repository connectors.

Audience

This document is intended for all Oracle Enterprise Repository users who want to configure the development environments to easily produce or consume files from Oracle Enterprise Repository. This document is also intended for all Oracle Enterprise Repository users who want to use REX and the REX APIs.

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Related Documents

For more information, see the following documents in the Oracle Enterprise Repository 11g Release 1(11.1.1) documentation set:

- Oracle Enterprise Repository on OTN - The home page for Oracle Enterprise Repository on Oracle Technology Network (OTN) is:
  http://www.oracle.com/technologies/soa/enterprise-repository.html

- Architect Center: SOA Governance: Essential to Your Business - Learn how effective SOA governance is an essential element in any enterprise transformation strategy by reading the Architect Center: SOA Governance: Essential to Your Business documents at:

- SOA Blog - Keep on top of the latest SOA blogs at:
  http://blogs.oracle.com/governance

Conventions

The following text conventions are used in this document:

<table>
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<th>Convention</th>
<th>Meaning</th>
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<tr>
<td><strong>boldface</strong></td>
<td>Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td><strong>monospace</strong></td>
<td>Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.</td>
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</table>
This part describes how to get started with Oracle Enterprise Repository connectors.

This part contains the following chapters:

- Chapter 1, "ClearCase Integration"
- Chapter 2, "Harvest-HTTP Repository Host Integration"
- Chapter 3, "Serena ChangeMan Integration"
This chapter describes how to set up a ClearCase repository and integrate it with Oracle Enterprise Repository.

This chapter contains the following sections:

- Section 1.1, "ClearCase Web Interface"
- Section 1.2, "File Stores"
- Section 1.3, "ClearQuest Integration"

### 1.1 ClearCase Web Interface

This section explains the procedure to follow in order to setup a ClearCase repository, which will allow ClearCase files to be linked to assets for future use/download. This section contains the following topics:

- Section 1.1.1, "Overview"
- Section 1.1.2, "Prerequisites"
- Section 1.1.3, "Creating and Configuring Repository and Assets"

#### 1.1.1 Overview

This section contains the following topics:

- "Webshpere 5.x Apache Plug-In"
- "WebLogic 8.1 Tuxedo Plug-In"

**Webshpere 5.x Apache Plug-In**

When using an HTTP server (such as Apache, IIS, IBM HTTP Server) to connect to a Websphere 5.x server using the `mod_was_ap20_http.so` or `mod_was_ap20_http.dll` plug-in, a configuration change must be applied to the `plugin-cfg.xml` document used with this connector:

Each time the `crtplugininst` application is run to regenerate the `plugin-cfg.xml` document for use on the HTTP server(s) the Config element will contain a value of `AcceptAllContent=false`, by default. This parameter will need to be changed to true to allow deltaV requests to be passed between the HTTP Server and the Websphere application server hosting the Oracle Enterprise Repository. This restriction only applies to an HTTP server using the Websphere plug-in to connect the two servers.
WebLogic 8.1 Tuxedo Plug-In

When using the Weblogic Tuxedo Plugin, there is a requirement of 8.1 SP3 being applied to both the application server as well as the Tuxedo Plug-In on the Apache server.

1.1.2 Prerequisites

Before using ClearCase, you must perform the following prerequisites:

■ The application server must support the UTF-8 character set to allow ClearCase and Oracle Enterprise Repository to function properly together.
■ Ensure the application server has access to the ClearCase server.
■ CCWeb and/or ClearTool must be installed and enabled on the application server machine. For more information, see the ClearCase documentation.

Enabling UTF-8 Support

Enabling the UTF-8 character set is accomplished in the following manners based on the server employed.

■ Weblogic 7.x/8.x

You may specify the character set for all deployed Weblogic Web applications deployed on a Weblogic Server instance by setting the system properties client.encoding.override and file.encoding equal to the name of the character set. Set this system property in the environment variable called JAVA_OPTIONS, for example, JAVA_OPTIONS=-Dclient.encoding.override=UTF-8 -Dfile.encoding=UTF-8.

These values can also be supplied as part of the startup options for the domain.

■ Websphere 5.x

Change the Generic JVM Arguments for the server to include the following parameter: -Dclient.encoding.override=UTF-8

■ Tomcat 5.0.25

Change the URIEncoding value in the Connector element within the server.xml file in the CATALINA_HOME/conf directory:

<Connector port="8080" URIEncoding="UTF-8" ...

Note: The ability to browse into the ClearCase server and view files/directory structure from within the Oracle Enterprise Repository application is provided through Files Stores integration.

Important Notes

1. Construct a view in CCWeb.
2. Create the link based on that view constructed in CCWeb.
3. Add the link within the File Information section of the asset within the Asset Editor.
4. Select the Test button to verify that the link is valid.
5. It should also be possible to access the link by pasting the URL into a browser address window. If this is not possible the link itself may be in error, or there may be a problem with the network connection to the ClearCase server.

1.1.3 Creating and Configuring Repository and Assets

You can create and configure repository and assets in Oracle Enterprise Repository. This section contains the following topics:

- "Configure an Artifact Store" on page 1-3
- "Set the artifact store from which to extract files" on page 1-3
- "Create an asset for the ClearCase file(s)" on page 1-4
- "Link the ClearCase file to the asset" on page 1-4
- "Extract the asset and the ClearCase file(s)" on page 1-5

Configure an Artifact Store

This procedure is performed in the Oracle Enterprise Repository Asset Editor screen.

1. Open the Actions menu.
2. Click Configure Artifact Store.
3. Click Add. The Create a New Artifact Store dialog is displayed, as shown in Figure 1–1.
4. Fill in the appropriate information, as shown in Figure 1–1.

Figure 1–1 Create a New Artifact Store Dialog

5. Click OK.

Set the artifact store from which to extract files

This procedure is performed on the Oracle Enterprise Repository Admin screen.

1. Click System Settings.
2. Enter cmee.server.paths.upload-repository in the Search box, as shown in Figure 1–2.
The Upload Area section within the Server Settings section is displayed, as shown in Figure 1–3.

3. Use the Submission Upload Artifact Store list to select the ClearCase repository.
4. Click Save when finished.

Create an asset for the ClearCase file(s)
1. Click Submit an Asset in the Oracle Enterprise Repository Assets screen.
   New assets may also be created via the File menu in the Asset Editor.
2. Select an Asset Type from the drop-down menu.
3. Enter a name for the new asset in the Name text box.
4. Enter a brief description in the Description field.

   **Note:** The asset detail will not appear on Oracle Enterprise Repository Assets screen until the registration process is completed.

Link the ClearCase file to the asset
1. Open the asset in the Asset Editor.
2. Locate the File Information section (typically on the General tab).
3. Click Add.
4. Create a name and/or description.
5. Click Edit.
6. Select the Repository File radio button.
7. Select **ClearCase** in the Host list.
   - The path should populate with information configured in artifact store section:
     - http://clearcase.example.com/ccaseweb/bin/ccweb/test.txt?dir=/usr/vobs/geneva&elem=test.txt&cmd=view&user=ccuser&password=<password>

8. Populate the file name field with the path of the view from CCWeb and the file name.

9. Click **View** to test the file.

**Extract the asset and the ClearCase file(s)**

1. In the Oracle Enterprise Repository Assets screen, use **Search** to locate the newly created asset.

2. Click the asset to open its Asset Detail Display.

3. Click **Use/Download**. The Use - Download page is displayed, as shown in **Figure 1–5**.

**Figure 1–5 Use - Download Page**

ClearCase files should be available for download along with the asset.
1.2 File Stores

File Stores allow Oracle Enterprise Repository to integrate with underlying proprietary repositories. File Stores allow integration with Rational ClearCase.

This section contains the following topics:

- Section 1.2.1, "Overview"
- Section 1.2.2, "Adding the File Stores Feature to Oracle Enterprise Repository"
- Section 1.2.3, "Creating a File Store"
- Section 1.2.4, "Configuring an Artifact Store For a File Store"
- Section 1.2.5, "Adding a File to an Asset Using the File Store's Artifact Store"
- Section 1.2.6, "Using File Stores"

1.2.1 Overview

The File Store integration with Rational ClearCase allows an asset registrar to browse the ClearCase Repository. The registrar can select a specific branch and version of a file to be used when the asset is extracted. In addition, the config spec for a file can be made available for use with WSAD or XDE.

The Rational ClearCase client must be installed and configured on the application server in order to use File Stores with Rational ClearCase. All connections to ClearCase use the ClearTool application in the ClearCase client and share a common set of ClearCase authentication credentials.

1.2.2 Adding the File Stores Feature to Oracle Enterprise Repository

To add the file stores feature to Oracle Enterprise Repository, perform the following steps:

1. Download the Oracle Enterprise Repository installation package from the Oracle download website.
2. Unzip the downloaded file to a temporary directory.
3. Using a SQL tool appropriate for your database, run the SQL script located in the temporary directory to add the File Store Artifact Store to your Oracle Enterprise Repository database.
4. Click the Admin link on the Oracle Enterprise Repository menu bar.
5. On the Admin screen, click System Settings.
6. Enable the property registry.advanced.filestores.enabled. A new section called File Store will appear, to which the application will automatically navigate.
7. Set Advanced Access File Stores to true.
8. Click Save.
9. Refresh the Admin screen to make the File Store section appear in the list on the left, before Basic Access Settings.

1.2.3 Creating a File Store

2. Install the Rational ClearCase client on the application server hosting Oracle Enterprise Repository.

3. Locate the `cleartool.exe` file on the application server. The entire file path to `cleartool.exe` will be necessary. It will be used with a File Store parameter called `cleartool.path`.

4. In the ClearCase client on the application server, create a view to be used by Oracle Enterprise Repository. A recommended practice is to include the word Flashline in the name of the view. The access path for the view will be used with a File Store parameter called `view.dir`.

5. Mount all desired ClearCase VOBs to the created view. Each VOB will require the creation of a different File Store. The name of the VOB will be the beginning of a File Store parameter called `vob.path`.

6. Locate a temporary directory on the application server. The full path to the temporary directory will be used with a File Store parameter called `tmp.dir`.

7. Click the **Admin** link in the Oracle Enterprise Repository menu bar.

8. In the Admin screen, locate the **File Stores** section.

9. Click **Create New** to create a new File Store. The Create New File Store dialog is displayed, as shown in **Figure 1–6**.

![Figure 1–6  Create New File Store Dialog](image)

10. Populate the fields with the following parameters:

- **Name**: specify a representative name for the ClearCase VOB referenced by the File Store. The CC prefix is recommended to indicate that the File Store is of type ClearCase. Recommended protocol for the File Store name is `CC_VOBNAME`.

- **Store Path**: enter `/cc/store01` for the first ClearCase File Store, `/cc/store02` for the second ClearCase File Store, and so on. The Store Path field is a symbolic path in Oracle Enterprise Repository. All File Stores use a common URL for file extraction. The Store Path appears in the URL, indicating which File Store hosts the integration to the actual content. The Store Path must be unique across all File Stores. The construction `/cc/store01` is recommended.

- **Store Type**: select ClearCase from the list.

- **cleartool.path**: enter the entire file path to the cleartool.exe file on the application server.
1. Click the Test Connection button to test the connection to the ClearCase client. If the connection is properly configured, then the message Test Succeeded will appear.

12. Click the Save button to save the File Store for use with Artifact Stores.

1.2.4 Configuring an Artifact Store For a File Store

This procedure is performed in the Asset Editor screen.

1. Select Configure Artifact Stores on the Actions menu. The Configure Artifact Stores dialog is displayed.

2. Click Add. The Create a New Artifact Store dialog is displayed, as shown in Figure 1–7.

Figure 1–7 Create a New Artifact Store Dialog

3. Enter a name for the artifact store. CC_VOBNAME is the recommended protocol.

4. In the Type list, select FileStore as the Artifact Store type.

5. Enter a Store Path by clicking on the Elipses button (next to the Store Path field) and selecting the name of the File Store to be used by this Artifact Store.

6. When finished, click OK. A separate Artifact Store must be created for each File Store.

1.2.5 Adding a File to an Asset Using the File Store's Artifact Store

This procedure is performed in the Asset Editor.

1. Select the asset to which the file is to be added.

2. Click the Add button in the File Information section on the Overview tab.

3. In the dialog enter a name (and description, if necessary).

4. Click Edit. The Edit URL dialog is displayed.

5. Click the Artifact Store File option.

6. From the Store list, select the repository for the File Store (CC_VOBNAME).
7. Next to the File Name box, browse the ClearCase repository.

8. When browsing, the top level will be the branches in the VOB. Select a branch. The branchname format is Branchname/Version. The version LATEST refers to the information that is currently checked in. Generally the highest number before LATEST is the desired version. In the image below, /main/server_preed_release/6 is version six of the branch /main/server_preed_release. The name in the folder area (store01) refers to the Store Path for the designated File Store.

9. The second level displays the folders within the selected Branchname/Version pair.

10. The third level displays the versions of the selected folder.

11. Subsequently, every selected folder will be followed by a desired version. The last two browsed levels will be:
   - The selected filename
   - The version of that file

12. The Select button will populate the File Name field on the Edit URL window.

13. Click View to test the URL.

### 1.2.6 Using File Stores

A File Store allows the user to see all versions of all files contained in the store. At this time File Stores work only with ClearCase.

To view a file in a store, perform the following steps in the Asset Editor screen:

1. Select an asset.
2. Click the Overview tab.

3. Click Add in the File Information section. The Edit dialog is displayed, as shown in Figure 1–10.
4. Click the Edit button. The Edit URL dialog is displayed, as shown in Figure 1–11.

5. In the Edit URL dialog, select Repository File.
6. Select a file store from the Host list.
7. Click Browse to locate a file, or enter the filename in the File Name text box.
8. Click View to view the file.
9. Click OK when finished.

1.3 ClearQuest Integration

Integrating ClearQuest with your system enables you to use a ClearQuest store in Oracle Enterprise Repository. Typically, an URL used to reach a file in ClearQuest resembles the following:

http://server.host.com:port/clearcasePath/fileName?dir=vobStructure&elem=fileName&
This section contains the following topics:

- Section 1.3.1, "Adding ClearQuest"
- Section 1.3.2, "Configuring a ClearQuest Artifact Store"
- Section 1.3.3, "Adding a File to an Asset Using the ClearQuest Artifact Store"

1.3.1 Adding ClearQuest

To add ClearQuest to your instance of Oracle Enterprise Repository:

1. Download the Oracle Enterprise Repository installation package (clearquest.zip) from the Oracle download site.
2. Unzip the download file to a temporary directory.
3. Using a SQL tool appropriate for your database, run the SQL script located in the temporary directory to add ClearQuest to your Oracle Enterprise Repository database.
4. Restart the application server.

1.3.2 Configuring a ClearQuest Artifact Store

To configure a ClearQuest artifact store in Oracle Enterprise Repository:

1. Click the Assets link in the Oracle Enterprise Repository menu bar. The Oracle Enterprise Repository Assets page is displayed.
2. Click Edit/Manage Assets to launch the Asset Editor.
3. Open the Actions menu.
4. Click Configure Artifact Stores. The Configure Artifact Stores dialog is displayed.
5. Click Add.
6. On the Create a new Artifact Store screen, enter a name for the artifact store file.
   - (Recommended: ClearQuest.)
7. In the Type list, select ClearQuest.
   - Accesses the ClearQuest web interface.
8. Enter a hostname for the server.
9. For the Path, enter: logon/url/default.asp.
10. (Optional) Enter a username.
11. (Optional) Enter a password.
12. When finished, click OK.

1.3.3 Adding a File to an Asset Using the ClearQuest Artifact Store

To add a file to an asset using a ClearQuest artifact store:

1. Launch the Asset Editor.
2. Select the appropriate asset.
3. Navigate to the File Information section on the asset's Overview tab.
4. Click Add.
5. In the dialog, enter a name and description, if necessary.
6. Click Edit. The Edit URL dialog is displayed.
7. Select the Artifact Store File option.
8. From the Store list, select ClearQuest Repository.
9. Click the Browse button (next to the File Name box) to edit a ClearQuest shortcut.
10. Click the button to Launch ClearQuest Web interface and create a shortcut to a ClearQuest resource.
11. In the ClearQuest Web interface use the Operation -> Create a Shortcut link to run the wizard to generate a shortcut in ClearQuest.
12. Copy and paste everything following the question mark (?) in the resulting shortcut to the Launch ClearQuest Web shortcut screen.
13. Click OK to populate the File Name with the shortcut portion.
14. Click View to test the URL.
   - This should open the ClearQuest interface to the resource to which the shortcut was assigned.
This chapter describes how to set up a Harvest-HTTP repository and integrate it with Oracle Enterprise Repository. This chapter contains the following sections:

- Section 2.1, "Overview"
- Section 2.2, "Installation"
- Section 2.3, "Configure an Artifact Store"
- Section 2.4, "Add the Harvest Artifact Store to an Asset"

### 2.1 Overview

The Harvest-HTTP Repository Integration is a single servlet Web application that allows the addition of files residing in a Harvest Repository to assets within Oracle Enterprise Repository. The application handles the physical retrieval of a file within a Harvest Repository based on an URL. The servlet name is `retrieve`.

### 2.2 Installation

1. Deploy the Harvest-HTTP Repository Host Integration on the application server.
   - `enterprise.repositories.harvest.hco.path` – Local path to the Harvest `hco.exe` file (i.e. `\C:\Program Files\CA\AllFusion Harvest Change Manager\hco.exe`)
   - `enterprise.repositories.harvest.tmp.path` – Local path to where files are temporarily stored.
   - `enterprise.repositories.harvest.use-single-sign-on=false`
   Leave the rest of the properties as they are by default.
3. Save changes and close.
4. Restart application server.

**Note:** Unix/Linux paths use forward slashes (/) and Windows paths use double backslashes (\).
2.3 Configure an Artifact Store

This procedure is performed in the Oracle Enterprise Repository Asset Editor.

1. Select **Configure Artifact Stores** from the Actions menu.
2. Click **Add** to open the Create a new Artifact Store dialog.
3. Create a new http repository using the following parameters:
   - **Hostname**: `<app server name with port>` where Harvest-HTTP Artifact Store Integration was installed.
   - **Path**: `harvest_rep/retrieve/<harvest_broker_name>`
   - Leave Username and Password blank.
4. Click **OK**.

2.4 Add the Harvest Artifact Store to an Asset

This procedure is performed in the Oracle Enterprise Repository Asset Editor.

1. Use Search or other means to locate the asset to which the files are to be added.
2. Open the asset.
3. Add the file:
   - Click **Repository File Selection**.
   - Select the Artifact Store corresponding to Harvest.
   - For File Name specify the Harvest path with the following format:
     - `<package_name>/<project_name>/<state_name>/<repository_path>/<filename>`
4. Click **OK**.
This chapter describes how to integrate Serena PVCS Dimensions with Oracle Enterprise Repository, which enables the use of a webdav-enabled PVCS repository within Oracle Enterprise Repository.

This chapter contains the following sections:

- Section 3.1, "Adding Serena Changeman Plug-ins"
- Section 3.2, "Configuring a PVCS Artifact Store"
- Section 3.3, "Add a File to an Asset Using a PVCS Repository"
- Section 3.4, "Security Considerations"

### 3.1 Adding Serena Changeman Plug-ins

To add Serena Changeman Plug-ins:

1. Navigate to this `Oracle_HOME/repositoryXXX/core/tools/solutions` directory on your machine. A list of all the solution packs for Oracle Enterprise Repository is displayed.
2. Unzip the `OER30-RC-Enhanced-SCM-Integrations.zip` file to a temporary directory.
3. Using an SQL tool appropriate for your database, run the SQL script located in the temporary directory to add Serena Changeman to your Oracle Enterprise Repository database.

### 3.2 Configuring a PVCS Artifact Store

To configure a PVCS artifact store:

1. Login to Oracle Enterprise Repository as a user. (Requires assignment to a role that includes the Edit Artifact Stores permission.)
2. Click the Edit/Manage Assets link in the sidebar on the Assets screen. The Asset Editor launches.
3. Select Configure Artifact Stores in the Actions menu. The Configure Artifact Stores dialog is displayed.
4. Click the Add button. The Create a new Artifact Store dialog is displayed.
5. Enter a descriptive name for the repository.
6. In the Type list, select the PVCS repository type for this repository definition.
7. Enter a hostname and path for the server.
8. If necessary, enter a username and password.

---

**Note:**
- This is an option; entering a username and password allows automatic login. To add a database password, add the "+" character and the database password. An example PVCS URL used to reach a specific file in PVCS through webdav resembles the following:
  ```
  http://repositoryName+databaseName:password@host.server.com:port/webdavPath/additionalPathStructure/filename
  ```
- If a username and/or a password is used to access this repository, check the option to Proxy Download Requests.

9. When finished, click Save.

### 3.3 Add a File to an Asset Using a PVCS Repository

To add a file to an asset using a PVCS repository:
1. Launch the Asset Editor.
2. Select the appropriate asset.
3. Navigate to the File Information section on the asset's Overview tab.
4. Click Add.
5. In the dialog, enter a name and description, if necessary.
6. Click Edit. The Edit URL dialog is displayed.
7. Select the Repository File option.
8. From the Host drop-down list, select PVCS Repository.
9. In the File Name box, enter the file name or browse to the file in the PVCS repository and select it.
10. Select View to test the URL.

### 3.4 Security Considerations
- Depending on the specific configuration, user names and passwords may be visible in URLs. Forcing individual user authentication at the file level solves the issue, but disables the Serena PVCS Dimensions browser in the Oracle Enterprise Repository Asset Editor. Using the Proxy Download Requests option in the artifact store definition will eliminate the possibility of the user gaining access to these details.
- Users may be able to exploit certain Serena PVCS Dimensions filepath characteristics to gain unauthorized access to restricted files when the Proxy Download Requests option is not selected in the artifact store definition.
Part II
Oracle Enterprise Repository Integration with Enterprise Manager

This part describes how to use the Enterprise Manager Integration Utility to integrate Enterprise Manager with Oracle Enterprise Repository. The Enterprise Manager Integration Utility is used from the command line.

This part contains the following chapters:

- Chapter 4, "Enterprise Manager Integration Utility"
This chapter describes how to get started with the Enterprise Manager Integration Utility and use it to integrate Enterprise Manager with Oracle Enterprise Repository.

This chapter contains the following sections:

- Section 4.1, "Overview"
- Section 4.2, "Using the Enterprise Manager Integration Utility"
- Section 4.3, "Configuring the Enterprise Manager Integration Utility"
- Section 4.4, "Known Issues"

### 4.1 Overview

Enterprise Manager (EM) is a comprehensive monitoring tool. It includes support for monitoring Oracle's SOA Products, as well as J2EE Servers, Databases, JVMs, and Operating Systems.

Oracle Enterprise Repository also supports storing some of the same runtime metrics within assets. Oracle Enterprise Repository integrates metrics from Amberpoint / OSM, using the XU utility.

The EM Integration utility closes the loop between EM and Oracle Enterprise Repository, by migrating metrics from EM into Oracle Enterprise Repository. The EM Integration utility pulls from EM and pushes to Oracle Enterprise Repository. The EM Integration tool currently supports and works with EM Grid Control.

This section contains the following topics:

- Section 4.1.1, "Prerequisites"
- Section 4.1.2, "Obtaining the Enterprise Manager Integration Utility"
- Section 4.1.3, "High Level Use Cases"

### 4.1.1 Prerequisites

Before using the EM Integration utility, you must perform the following prerequisites:

- The assets that receive metrics from EM must already be in Oracle Enterprise Repository. They should have been published to Oracle Enterprise Repository from SOA Suite/BPEL-PM or Oracle Service Bus using the Oracle Enterprise Repository Harvester. The EM Integration utility requires the OER-Harvester datapack to be installed in Oracle Enterprise Repository.

For information about importing, see the Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.
The EM Integration utility needs read access to the Enterprise Manager shared database views.

For more information, see http://download.oracle.com/docs/cd/B16240_01/doc/em.102/b40007/views.htm#BACCEIBI.

The EM Integration utility requires Java SDK version 6 or higher.

Install 10g EM Grid Control in order to enable EM Integration tool to harvest into Oracle Enterprise Repository. The Oracle Enterprise Repository EM Integration tool, currently, only integrates with EM-Grid control.

4.1.2 Obtaining the Enterprise Manager Integration Utility

To obtain the Enterprise Manager Integration utility:

1. Navigate to this Oracle_HOME\repositoryXXX\core\tools\solutions directory on your machine. A list of all the solution packs for Oracle Enterprise Repository is displayed.

2. Unzip the 11.1.1.2.0-EM-Integration.zip file to a temporary directory.


4.1.3 High Level Use Cases

You can use the EM Integration utility to:

- Publish metrics from Oracle Service Bus Services in EM to existing Oracle Enterprise Repository assets.
- Publish metrics from BPEL-PM Processes in EM to existing Oracle Enterprise Repository assets.
- Publish metrics from Web Services in EM to existing Oracle Enterprise Repository assets.
- Publish Endpoint and Deployment : BPEL assets in Oracle Enterprise Repository from deployment information in EM.
- Support links back to the detailed metrics in EM, from the Oracle Enterprise Repository Web UI.
- Support configurability and extensibility, so that new targets in EM can be mapped to Oracle Enterprise Repository assets.

4.2 Using the Enterprise Manager Integration Utility

This section describes how to use the Enterprise Manager Integration Utility.

This section contains the following topics:

- Section 4.2.1, "Running from Command Line"
- Section 4.2.2, "Scheduling from Enterprise Manager"
- Section 4.2.3, "Metric Publishing"
4.2.1 Running from Command Line

The EM Integration utility can be run in the command line using the `em-integration.bat` utility (for Windows) or `em-integration.sh` (for Linux and Unix).

Before running `em-integration.bat` or `em-integration.sh`, ensure that the environment variables mentioned in Table 4–1 are set. In Windows, from a command window, you can type "set X" to see the value of the variable X, and "set X=abc" to set the value of FOO to "abc".

<table>
<thead>
<tr>
<th>Table 4–1 Command Line Script</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environment Variable</strong></td>
</tr>
<tr>
<td>JAVA_HOME</td>
</tr>
</tbody>
</table>
| JAVA_OPTS | Ensure that you set your JAVA_OPTS parameter as follows:  

```  
set JAVA_OPTS=-Dhttp.proxyPort=80  
-Dhttp.proxyHost=www-proxy.us.oracle.com  
-Dhttp.nonProxyHosts= ***.oracle.com|localhost"
```

JAVA_OPTS refers to the extra options to the java executable. In normal cases, there is no need to set this variable. However, a common exception when you need to set this variable is when your machine is inside a firewall, and you need to use an HTTP proxy to access external servers.

See Also:  
http://java.sun.com/javase/6/docs/technotes/guides/net/proxies.html

Table 4–2 shows the options that can be specified using the EM Integration command line utility:

<table>
<thead>
<tr>
<th>Table 4–2 Command Line Options for the EM Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EM Integration Options</strong></td>
</tr>
<tr>
<td><code>-settings &lt;file&gt;</code></td>
</tr>
<tr>
<td><code>-er_url &lt;URL&gt;</code></td>
</tr>
<tr>
<td><code>-er_user &lt;User Name&gt;</code></td>
</tr>
</tbody>
</table>
| `-er_password <Password>` | Specifies the password of the Oracle Enterprise Repository user. To ensure security, the password must be encrypted. The Oracle Enterprise Repository Web console has a tool to encrypt passwords:  
http://<host>:<port>/<domain>/diag/encryptstrings.jsp |
| `-em_url <URL>` | Specifies the JDBC URL for the EM database. |
| `-em_user <User Name>` | Specifies the EM database user name. |
| `-em_password <Password>` | Specifies the EM database password. To ensure security, the password must be encrypted. The Oracle Enterprise Repository Web console has a tool to encrypt passwords:  
http://<host>:<port>/<domain>/diag/encryptstrings.jsp |
| `-help` | Displays the online help for the EM Integration utility. |
4.2.2 Scheduling from Enterprise Manager

Enterprise Manager has the ability to schedule command-line applications to run periodically. The EM Integration utility can be scheduled to run this way.

For more information, see "Job System" in Oracle Enterprise Manager Administration.

It is recommended that you schedule the EM Integration to run once a day, in the evening or when there is low activity on the system.

4.2.3 Metric Publishing

The section describes the various metric publishing options:

4.2.3.1 Oracle Service Bus

EM Integration updates existing assets in Oracle Enterprise Repository of type "Endpoint", which have an endpointURI attribute that matches the endpointURI metric in EM, for Oracle Service Bus Proxy Services and External Services.

Note: An External Service is a service, which is invoked by an Oracle Service Bus Business Service.

If no "Endpoint" asset is found with the matching endpointURI, then the tool attempts to find a matching Service asset, by name and Oracle Service Bus service type (BusinessService or ProxyService). If it finds one, then it creates a new "Endpoint" asset and relates it to the service. In the case of Business Services, the endpoint is related to the External Service invoked by the Business Service.
4.2.3.2 BPEL PM

EM Integration updates existing assets in Oracle Enterprise Repository of type "Deployment:BPEL", which has the "EntryPoint" relationship to an "Endpoint" asset that has an endpointURI attribute that matches the endpointURI metric in EM. EM stores the WSDL location of the endpoint.

If no "Endpoint" asset is found with the matching endpointURI, then the tool attempts to find a matching Service asset, by qualified name from the WSDL. If it finds one, then it creates a new "Endpoint" asset and relates it to the service.

If no "Deployment:BPEL" asset is found, then the tool attempts to find a matching Business Process: BPEL asset, by process name. If it finds one, then it will create a new "Deployment:BPEL" asset and relates it to the service.

4.2.3.3 Web Services

EM Integration updates existing assets in Oracle Enterprise Repository of type "Endpoint", which have an endpointURI attribute that matches the endpointURI metric in EM.

If no "Endpoint" asset is found with the matching endpointURI, then the tool attempts to find a matching Service asset, by qualified name from the WSDL. If it finds one, then it creates a new "Endpoint" asset and relates it to the service.

4.2.3.4 Artifacts Creation

For every "Endpoint" that is created, the EM Integration Utility creates a corresponding Artifact:WSDL asset, if it does not already exist in Oracle Enterprise Repository. The EM Integration Utility also creates the Artifact:WSDL and Artifact:XSD assets for any imported file. It follows the fingerprinting rules in Oracle Enterprise Repository Harvester to look for existing artifacts in Oracle Enterprise Repository.

4.2.3.5 Endpoint Creation

It is common for production endpoints to be monitored in EM, but not captured in Oracle Enterprise Repository. The EM Integration utility creates these endpoints, if it can find a matching service.

The EM Integration utility creates Endpoint assets, if it can find a matching Service and creates Deployment:BPEL assets, if it can find a matching Business Process:BPEL.

4.2.3.6 Metrics to Update

In its default configuration, EM Integration attempts to update the following metrics in Oracle Enterprise Repository. These are all visible in the Operational tab for the asset in the Oracle Enterprise Repository Web user interface.

Not all of these metrics are gathered in EM for all of the target types mentioned above, so some might be omitted. The em-integration-settings.xml file configures which metrics are gathered for which targets.

See Also: Section 4.3.2.1, "Metric Mappings"

- Daily Average Response Time
- Weekly Average Response Time
- Monthly Average Response Time
4.3 Configuring the Enterprise Manager Integration Utility

This section describes how to configure the Enterprise Manager Integration Utility.

This section contains the following topics:

- Section 4.3.1, "Setting the Repository and Enterprise Manager Connection Information for the Command-line Utility"
- Section 4.3.2, "Advanced Configuration"

4.3.1 Setting the Repository and Enterprise Manager Connection Information for the Command-line Utility

Open the `em-integration-settings.xml` file, which is located at `<EM Integration Home>` and modify the following XML chunk to point to the Oracle Enterprise Repository instance, the EM database, and the web console with the right credentials.

The EM database is used to retrieve the metric information that is sent to Oracle Enterprise Repository. The EM console URL is used as the base URL for links back to EM, that are created within Oracle Enterprise Repository.

The `introspectionSettings` section is used to configure the properties of any Endpoint assets that the utility creates. The `createMissingEndpoints` attribute indicates whether Endpoint and `Deployment:BPEL` assets are created. If false, then the rest of the section in the code below is ignored.

The `matchMultipleEndpoints` attribute indicates the required action to be taken if the utility finds multiple Endpoints or `Deployment:BPEL` assets in Oracle Enterprise Repository that match a target in EM. If true, then it updates all the endpoints with metrics (and log a warning). If false, then it skips the target (and log a warning).

The `matchMultipleServices` attribute indicates the required action to be taken if the utility finds multiple Services or `Business Process:BPEL` assets in Oracle...
Enterprise Repository that match a target in EM, during endpoint creation. If true, then it attaches new Endpoints / Deployment:BPELs to each of the matching assets (and log a warning). If false, then it skips the target (and log a warning).

The introspectionDescription, introspectionVersion, and registrationStatus attributes indicate properties that will be set on any assets created.

```xml
<repository>
  <uri>http://localhost:7131/oer30/services/FlashlineRegistry</uri>
  <credentials>
    <user>admin</user>
    <password>*****</password>
    <enableTransaction>false</enableTransaction>
    <triggerEvent>false</triggerEvent>
  </credentials>
  <timeout>120000</timeout>
</repository>
```

Alternatively, the connection information can also be passed as parameters to the command line utility as follows:

```
```

### 4.3.1.1 Encrypting the Configuration File Passwords

To ensure security, the passwords in the configuration file must be encrypted before running the Enterprise Manager Integration utility. The password encryption tool, (encrypt.bat/encrypt.sh), which is located in `<Oracle_home>/tools/solutions/11.1.1.2.0-OER-PasswordTools.zip`, allows you to encrypt the passwords that are stored in the configuration file, `em-integration-settings.xml`.

1. Navigate to the `<em_integration_home>` directory.

---

**Note:** It is recommended that you run the Enterprise Manager Integration Utility as a user with the Basic Access Settings for Assets - View, Edit, Accept, and Register.
2. From a command prompt, run the password encryption tool as follows:

   > encrypt.bat em-integration-settings.xml
   em-integration-settings.xml

4.3.2 Advanced Configuration

This section describes the following advanced configuration options for the Enterprise Manager Integration utility:

- Section 4.3.2.1, "Metric Mappings"
- Section 4.3.2.2, "Target Finders"
- Section 4.3.2.3, "Logging"

4.3.2.1 Metric Mappings

The mapping between metrics in EM and fields in Oracle Enterprise Repository are configured in `em-integration-settings.xml`, as shown in Figure 4–2. To change these from the default settings, open this file and modify the following:

- `<metricMappingGroup>`: Mappings for a set of metrics with the same metric name in the EM database views. EM groups a set of related metrics under the same "metric name". Each individual metric has a different "metric column". This element has the following attribute:
  - `metricName`: The EM metric name from the EM database views.

- `<metricMapping>`: Mapping for a single metric. This element has the following attributes:
  - `metricColumn`: The EM metric column from the EM database views.
  - `rollupPeriod`: Indicates which EM database view to query against, and how to aggregate the data. Must be one of {DAILY, WEEKLY, MONTHLY, CURRENT}.
  - `viewColumn`: Indicates which column in the EM database view to pull the data from. Must be one of {VALUE, AVERAGE, SUM, MINIMUM, MAXIMUM, STANDARD_DEVIATION, SAMPLE_COUNT, COLLECTION_TIMESTAMP, ROLLUP_TIMESTAMP, NOW(), DETAILS_URL}.
    * The CURRENT rollup period does not support columns AVERAGE, SUM, MINIMUM, MAXIMUM, STANDARD_DEVIATION, SAMPLE_COUNT, or ROLLUP_TIMESTAMP.
    * The DAILY, WEEKLY and MONTHLY rollup periods do not support columns VALUE or COLLECTION_TIMESTAMP.
    * NOW() is a "virtual column" that contains the time of the query against EM.
    * DETAILS_URL is a "virtual column" that contains a URL to the detailed information in EM. This is constructed by the EM Integration code - it’s not in the EM database views.
  - `oerField`: The internal name of the custom data field in Oracle Enterprise Repository where this data is stored.
  - `overwrite`: Indicates whether to overwrite the custom data field in Oracle Enterprise Repository if it already has data. It represents either true or false, by default the value is true, if not specified.
4.3.2.2 Target Finders

The logic for correlating targets in EM with assets in Oracle Enterprise Repository is different for each target type. EM Integration ships with target finders for the following products: Oracle Service Bus, BPEL-PM, WebLogic.

If you are an advanced user, then you can create your own target finder classes. These must be configured in `em-integration-settings.xml`, as shown in Figure 4–3.

- `<targetFinder>`: Mappings for a target type in EM to a target finder class. This element has the following attributes
  - `targetType`: The EM target type from the EM database views.
  - `targetFinderClass`: The fully-qualified classname of the finder class. This must implement `com.oracle.oer.integration.em.TargetFinder`, which is found in `em-integration.jar`.

4.3.2.3 Logging

EM Integration uses log4j for logging the detailed tasks performed and the log file is placed in the `<EM Integration Home>`. The logging options can be changed by updating the `log4j.properties` file located in the `<EM Integration>` folder.

4.4 Known Issues

This section describes the following known Enterprise Manager Integration Utility issues:

4.4.1 Using Incorrect Encrypted Password

If you configure the `em-integration-settings.xml` file with incorrect encrypted password, then a very long stack trace is displayed. An extract from the very long stack trace is as follows:

```
  at org.apache.xerces.impl.XMLNSDocumentScannerImpl.scanStartElement(Unknown Source)
  at org.apache.xerces.impl.XMLDocumentFragmentScannerImpl$FragmentContentScannerImpl$1.processElement(Unknown Source)
```
Known Issues

Dispatcher.dispatch(Unknown Source)
at org.apache.xerces.impl.XMLDocumentFragmentScannerImpl.scanDocument(Unknown Source)
at org.apache.xerces.parsers.XML11Configuration.parse(Unknown Source)
at org.apache.xerces.parsers.DTDXConfiguration.parse(Unknown Source)
at org.apache.xerces.parsers.XMLParser.parse(Unknown Source)
at org.apache.xerces.parsers.AbstractSAXParser.parse(Unknown Source)
at javax.xml.parsers.SAXParser.parse(SAXParser.java:395)
at org.apache.axis.encoding.DeserializationContext.parse(DeserializationContext.java:227)
at org.apache.axis.SOAPPart.getAsSOAPEnvelope(SOAPPart.java:696)
at org.apache.axis.Message.getSOAPEnvelope(Message.java:424)
at org.apache.axis.handlers.soap.MustUnderstandChecker.invoke(MustUnderstandChecker.java:62)
at org.apache.axis.client.AxisClient.invoke(AxisClient.java:206)
at org.apache.axis.client.Call.invokeEngine(Call.java:2765)
at org.apache.axis.client.Call.invoke(Call.java:2748)
at org.apache.axis.client.Call.invoke(Call.java:2424)
at org.apache.axis.client.Call.invoke(Call.java:2347)
at org.apache.axis.client.Call.invoke(Call.java:1804)
at com.flashline.registry.openapi.service.v300.FlashlineRegistryTrSoapBindingStub.authTokenCreateWithLicense(FlashlineRegistryTrSoapBindingStub.java:741)
at com.oracle.oer.sync.plugin.writer.oer.ALERConnectionCache.getAuthToken(ALERConnectionCache.java:128)
at com.oracle.oer.sync.plugin.writer.oer.ALERAssetQueries.getToken(ALERAssetQueries.java:82)
at com.oracle.oer.sync.plugin.writer.oer.ALERAssetQueries.assetTypeQueryByUUID(ALERAssetQueries.java:159)
at com.oracle.oer.sync.framework.MetadataManager.putAssetType(MetadataManager.java:204)
at com.oracle.oer.sync.framework.impl.DefaultPluginManager.processInterceptor(DefaultPluginManager.java:104)
... 5 more
This part describes how to configure Oracle JDeveloper and other IDEs to easily consume files from Oracle Enterprise Repository.

This part contains the following chapters:

- Chapter 5, "Integration with Development Environments"
- Chapter 6, "Configuring Oracle Enterprise Repository to Support Integration with Your IDE"
- Chapter 7, "Configuring Your IDE to Support Integration with Oracle Enterprise Repository"
- Chapter 8, "Using the IDE to Interact with Oracle Enterprise Repository"
Integration with Development Environments

This chapter describes how to integrate Oracle Enterprise Repository with various development environments.

This chapter contains the following sections:

- Section 5.1, "Overview"
- Section 5.2, "Best Practices"
- Section 5.3, "High Level Use Cases"

5.1 Overview

The Oracle Enterprise Repository provides integration within development environments so developers can easily search for and use assets from the repository without leaving their developent environment. Assets and any associated artifacts are downloaded directly to the developer’s workspace. Integration also provides a convenient way to submit or harvest assets from the development environment into the Oracle Enterprise Repository for use throughout the enterprise.

Repository Access within the developer’s workspace also provides a view into Oracle Enterprise Repository that enables developers to, download artifacts and assets from the repository, query the repository, and view the contents of the repository.

The goal of this integration is to ensure that SOA Governance becomes part of the fabric of every day development.

This section contains the following topics:

- Section 5.2, "Best Practices"
- Section 5.3, "High Level Use Cases"

5.2 Best Practices

This section describes the following best practice processes:

- Section 5.2.1, "Asset Production Process"
- Section 5.2.2, "Asset Consumption Process"

5.2.1 Asset Production Process

Oracle Enterprise Repository is used to track new assets and asset enhancements from the time they are proposed through the retirement of the assets, which also includes the time when the assets are being developed and when the assets are completed.
Through Oracle Enterprise Repository, assets are used to produce and consume projects, to provide traceability and support impact analysis, and to point out project-level impacts of changes to the asset release plans.

Initially, a business analyst provides a description of the functionality that needs to be produced. If determined that the proposed functionality does not already exist, then an architect provides the functional designs and non-functional requirements. The development team then produces, harvests, or enhances an asset that meets the functional and non-functional requirements.

Figure 5–1 describes a sample asset production process.

**Figure 5–1 The Asset Production Process**

This means that the development team needs visibility into the assets that they are to produce such as the requirements, use cases and so on. Oracle Enterprise Repository provides that visibility by allowing developers to view an asset details of an asset directly from the development environment. The development team builds the specified asset and then harvests the asset into the Oracle Enterprise Repository, where it goes through a review and approval process.

This section contains the following topics:

- Section 5.2.1.1, "Policies"
- Section 5.2.1.2, "Propose/Submit Assets"

### 5.2.1.1 Policies

The production and enhancement of assets can be governed through design-time policies. Policies are applied to assets in order to communicate asset requirements that need to be considered during design and development, and to provide administrators with the means to enforce and monitor asset compliance with governance, architecture, and other organizational standards. For example, a policy might articulate corporate quality standards, identifying the platforms that an asset should run on and identifying acceptable defect density rates.

- A policy can be applied to multiple assets.
- Multiple policies can be applied to any asset.
- Each policy consists of at least one assertion statement. Each assertion has a name and description and includes a technical definition. The technical definition accommodates additional metadata that may be required to automatically validate the assertion using third-party testing and validation tools. This metadata may be
Best Practices

Integration with Development Environments

Web service-specific policy information, XML, or any other format that can be read by an external system. For example, an assertion statement for defect density might state that defect density must be less than .1%.

Policy information in Oracle Enterprise Repository can be accessed through the development environment. Once the development team harvests an asset into Oracle Enterprise Repository, then the policies can be automatically validated through tooling or manually validated by subject matter experts.

5.2.1.2 Propose/Submit Assets
Assets may be proposed or submitted to the Oracle Enterprise Repository in multiple ways, depending on the role and situation, some of the methods are as follows:

■ The general Oracle Enterprise Repository user community can submit asset requests or completed assets from the console.
■ Business analysts and architects can create assets to be built using the Asset Editor.
■ Development teams can submit or harvest assets from their development environments.
■ Existing assets stored in files or directories can be harvested by Competency Centers or Portfolio Managers.
■ QA or IT Operations can harvest assets from the build environment or from the run time environment.

5.2.2 Asset Consumption Process

There are two primary design-time consumption models within a standard Software Development Lifecycle (SDLC) process:

Model 1: Assets are identified early in the lifecycle (also known as Prescriptive Reuse)
■ Business analysts and/or project architects identify assets that fulfill the functional and non-functional requirements of the project.
■ Development teams then receive a "kit" of relevant assets.

Model 2: Development-driven discovery
■ Developers identify assets that might fulfill the functional and non-functional requirements of the project.

Model 1 is the most-preferred design-time consumption models because it results in a higher level of reuse, but requires the organization to have a mature SDLC process and well-defined roles.

This section contains the following topics:
■ Section 5.2.2.1, "Prescription Reuse"
■ Section 5.2.2.2, "Developer-Driven Discovery"
■ Section 5.2.2.3, "Automated Usage Detection"

5.2.2.1 Prescription Reuse
Within the Oracle Enterprise Repository Web console, business analysts and/or project architects identify assets that fulfill the functional and non-functional requirements of the project. They package these assets into a "kit" called a Compliance Template. A Compliance Template communicates asset requirements or asset solution sets to
internal or outsourced project teams. Two types of Compliance Templates included in Oracle Enterprise Repository are:

- Project Profiles
- Architecture Blueprints

Project profiles are usually created for individual projects, whereas architecture blueprints are reusable solution sets that can be leveraged by multiple projects. Some of the common use cases include:

- Project planners generate a project profile for each project in the portfolio, identifying the reusable assets that factored into the project’s planning and estimating assumptions.
- Business analysts generate a project profile to identify assets that fulfill a project’s business requirements.
- Project architects generate a project profile to identify assets that fulfill a project’s technical requirements.
- Enterprise architects generate an architecture blueprint that specifies the standard frameworks and assets that are to be used to fulfill project-level security requirements.
- Those responsible for Service-Oriented Architecture(s) (SOA) generate an architecture blueprint to identify the services that orchestrate a particular business function.
- Product line architects generate an architecture blueprint that specifies the assets that are to be used to build a specific product line (similar to a Bill of Material).

Figure 5–2 describes a sample prescriptive reuse process.

Compliance Templates are applied to projects through the Oracle Enterprise Repository Web console and the assets identified in the compliance template are automatically displayed in the project’s development environment. In this way, development teams get a jump-start on their development efforts.

For more information about Compliance Templates, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.

Best Practices
5.2.2.2 Developer-Driven Discovery

There are two ways that developers can get assets from the Oracle Enterprise Repository:

- Through the Oracle Enterprise Repository Web Console
- Through their IDE (Note that this functionality is currently available for Eclipse and VS .NET. Developers will be able to download assets from JDeveloper in a future release.)

Developers can come to the Oracle Enterprise Repository to obtain the assets that they would like to use on their projects. The Use-Download function in the Oracle Enterprise Repository provides access to the asset artifacts. In addition, developers can select and download all assets related to the primary asset, ensuring that they have all necessary dependencies. The repository tracks usage and generates usage-based reports.

Developers can also access Oracle Enterprise Repository from their development environment. This means that developers never have to leave their IDE’s to get access to the assets that they need.

5.2.2.3 Automated Usage Detection

Oracle Enterprise Repository tracks and reports on the design-time use of assets. The automated usage detection is tracked through two methods:

- Through the manual asset Use - Download process within Oracle Enterprise Repository or through the development environment
- Automatic usage detection leveraging Software File Identification (SFID)

Software File Identification (SFID) provides the ability to determine asset usage independent of the manual asset Use - Download process. The SFID process tags selected files and asset artifacts with a unique SFID fingerprint. This tag is then used to detect when and where an asset is used, even if the asset was acquired through means other than the Use - Download process. An instance of usage is recorded by Oracle Enterprise Repository when tagged files within the asset are opened in a developer’s IDE. For more information about SFID, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.

5.3 High Level Use Cases

The Section 5.2, "Best Practices" provides an overview of the production and consumption processes, and encompasses the development environment use cases. The individual use cases are described below. Each development environment includes a subset of these use cases.

- Section 5.3.1, "Submit Files"
- Section 5.3.2, "Harvest Files"
- Section 5.3.3, "Search Oracle Enterprise Repository"
- Section 5.3.4, "View Asset Details"
- Section 5.3.5, "Download Artifacts"
- Section 5.3.6, "Prescriptive Reuse"
- Section 5.3.7, "Automatic Usage Detection"
5.3.1 Submit Files
Through the development environment, developers can select files to submit to the Enterprise Repository. The files are bundled into a .zip format for submission. The developer can submit single and/or compound-payload assets to Oracle Enterprise Repository.

5.3.2 Harvest Files
Oracle Enterprise Repository can harvest from Oracle products and standards based files. This includes Oracle SOA Suite, Oracle Service Bus, and standard BPEL, WSDL, XSD and XSLT files and file directories. When harvested, Oracle Enterprise Repository automatically creates assets, populates asset metadata, and generates relationship links based on the information in the artifact files. The harvesting function is available from the command line, and can be integrated into the IDE, or into the build process.

For more information, see *Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository*.

5.3.3 Search Oracle Enterprise Repository
Access to assets and artifacts in the Enterprise Repository is available through the development environment. Through the IDE, developers can search for assets matching various criteria or view assets that may be of interest to a development project project.

5.3.4 View Asset Details
For selected assets, developer can view asset details, such as description, usage history, expected savings, relationships, etc. Within the asset metadata, links to supporting documentation, user guides, test cases, etc., are provided to better enable developers to reuse existing functionality.

5.3.5 Download Artifacts
Developers can download an asset’s artifacts (i.e., payload) into their project. Typically an asset payload is the functionality that a developer needs to use a service (such as a WSDL file) or incorporate into their code base (such as a binary or a BPEL file).

5.3.6 Prescriptive Reuse
Through the Oracle Enterprise Repository, analysts, architects, technical leads, and others who are involved in the design stages of a project can create a list of assets that fulfills a project’s requirements. The list of assets are captured in compliance templates in the repository and the compliance templates are associated with an Oracle Enterprise Repository project.

From within the IDE, you can view a list of assets appearing in all of the Compliance Templates assigned to your project. You can see which of the assets have been used and/or other project members. For more information about compliance templates, see *Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository*.

5.3.7 Automatic Usage Detection
Oracle Enterprise Repository can automatically detect asset reuse within the development environment. This allows development teams to ensure that they get asset reuse credit, regardless of whether the assets have been downloaded through
Oracle Enterprise Repository or pulled from another source, such as the developer’s desktop.

For more information about each of these use cases for various IDEs, see Chapter 8, "Using the IDE to Interact with Oracle Enterprise Repository".

Table 5–1 describes the specific use cases supported for each development environment.

<table>
<thead>
<tr>
<th>Use Case</th>
<th>JDeveloper</th>
<th>Eclipse</th>
<th>VS .NET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit Files</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harvest (BPEL, WSDL, XSD, XSLT)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Harvest (SCA)</td>
<td>11g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search Oracle Enterprise Repository</td>
<td>11g</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>View Asset Details</td>
<td>11g</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Download Artifacts</td>
<td>11g</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Prescriptive Reuse</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Automatic Usage Detection</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5–2 describes the supported versions and target audience for each IDE.

<table>
<thead>
<tr>
<th>IDE</th>
<th>Target Audience</th>
<th>Supported Versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>JDeveloper</td>
<td>Oracle Customers</td>
<td>10gR3, 11gR1</td>
</tr>
<tr>
<td>Eclipse</td>
<td>Java Developers</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.3 with Sun JDK 5.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.0.3 with Sun JDK 5.0</td>
</tr>
<tr>
<td>VS .NET</td>
<td>.Net Developers</td>
<td>2008</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2005</td>
</tr>
</tbody>
</table>
This chapter describes how to configure Oracle Enterprise Repository to support Integration with your IDE.

You need to perform some steps in the Oracle Enterprise Repository before configuring the IDE. The steps are as mentioned below:

- Section 6.1, "Install the Harvester"
- Section 6.2, "Assign IDE Users to Oracle Enterprise Repository Projects"
- Section 6.3, "Establish Compliance Templates"
- Section 6.4, "Set up Automatic Usage Detection"

### 6.1 Install the Harvester

The Harvester can harvest standards-based artifacts generated from any IDE such as Oracle JDeveloper, Eclipse, and VS .NET. The Harvester can be integrated with any of these IDEs and then run with the respective IDE client.

For more information about the Harvester, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.

### 6.2 Assign IDE Users to Oracle Enterprise Repository Projects

Oracle Enterprise Repository tracks assets produced by projects in any IDE such as Oracle JDeveloper, Eclipse, and VS .NET, as well as assets consumed by the projects created in these IDEs.

For more information about adding a new project and assigning users to the project, see Oracle Fusion Middleware User Guide for Oracle Enterprise Repository.

### 6.3 Establish Compliance Templates

Compliance Templates describe a particular family of Oracle Enterprise Repository artifacts and are available only for some product configurations such as Eclipse and VS .NET. Compliance templates are required to support the Prescriptive Reuse use cases.

For more information about how to establish compliance templates, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.
6.4 Set up Automatic Usage Detection

Software File Identification (SFID) is a process of determining asset usage in Oracle Enterprise Repository. You can use SFID to work with your development environment such as Eclipse and VS .NET. Depending on your IDE, SFID requires the installation of the Oracle Enterprise Repository Plug-in for Workspace Studio, which is an Eclipse-based IDE, or the Oracle Enterprise Repository Plug-in for Visual Studio .NET.

For more information about setting up automatic usage detection using SFID, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.
This chapter describes how to get started with Harvester and its use in various high level use cases.

- Section 7.1, "Configuring Oracle JDeveloper"
- Section 7.2, "Configuring Eclipse"
- Section 7.3, "Configuring VS .NET"

7.1 Configuring Oracle JDeveloper

This section contains the following topics:

- Section 7.1.1, "Integrating with Oracle JDeveloper 11g R2"
- Section 7.1.2, "Integrating with Oracle JDeveloper 11g R1"
- Section 7.1.3, "Integrating with Oracle JDeveloper 10g"

7.1.1 Integrating with Oracle JDeveloper 11g R2

To create a connection between the Oracle Enterprise Repository and Oracle JDeveloper:

1. Install Oracle JDeveloper on your local computer.
3. Open Oracle JDeveloper and click Help, Check for Updates. The Check for Updates dialog is displayed.
4. Click Next. The Source page is displayed.
5. Click Install from Local File.
6. Click Browse to browse for the Oracle Enterprise Repository bundle file, and then click Next. The Summary page is displayed.
7. Click Finish.
8. Restart Oracle JDeveloper. The Oracle JDeveloper window is displayed.
10. Select General, Connections, and then select Oracle Enterprise Repository Connection, as shown in Figure 7–1.
11. Click **OK**. The Create Oracle Enterprise Repository Connection dialog is displayed, as shown in Figure 7–2.

**Figure 7–2 Create Oracle Enterprise Repository Connection Dialog**

12. Enter the following information:
   - Repository URL: The URL from where a running instance of Oracle Enterprise Repository can be accessed.
   - User Name: The user name for the Oracle Enterprise Repository.
   - Password: The password for the Oracle Enterprise Repository.
13. Click **Test Connection**. A success message is displayed in the Status pane.

14. Click **OK**.

15. In the Resource Palette, under IDE Connections, expand Oracle Enterprise Repository to see the application server connection that you created, as shown in **Figure 7–3**.

**Figure 7–3 Resource Palette**

16. Enter a search criteria to search for assets in the Search field. A list of all the assets is displayed, as shown in **Figure 7–4**.

**Figure 7–4 Search Results**

**Note:** You have to install SOA solution pack into Oracle Enterprise Repository to enable harvesting from JDeveloper. This is applicable for both JDeveloper 10g and 11g.

7.1.2 **Integrating with Oracle JDeveloper 11g R1**

To install the harvester Ant tasks in JDeveloper 11g or in SOA Suite 11g, perform the following steps:
1. Double-click `jdeveloper.exe` in the jdev installation directory to open Oracle JDeveloper.

   **Note:** You should start and close the JDeveloper application at least once during this step.

2. Unzip the harvester zip file into your JDeveloper installation. The contents of the zip file are extracted to the `<jdeveloper_home>/harvester` directory.

3. Edit the `tools11g.xml` file to match your JDeveloper installation.


   If there is an existing entry `"<hash n = "oracle.ideimpl.externaltools.ExternalToolList">`, then replace with the contents in the `tools11g.xml` file. If not, add it right after the initial `<ide:preferences>` element.

### 7.1.3 Integrating with Oracle JDeveloper 10g

To configure Oracle JDeveloper to support the integration with Oracle Enterprise Repository, perform the following steps:

1. Navigate to the `Oracle_HOME/repositoryXXX/core/tools/solutions` directory and unzip the `11.1.1.2.0-OER-Harvester.zip` file to the Oracle JDeveloper directory. For example, if the `jdeveloper.exe` file is located in `C:\oracle\soa`, ensure that the introspector directory is unzipped into that directory.

2. Navigate to the `<jdeveloper_home>/harvester` directory and right-click the `tools.xml` file to open in a text editor.

3. Copy all the elements between the `<tools>` and `</tools>` elements and paste the copied elements into the `tools.xml` file in the `<jdeveloper_home>/jdev/system/oracle.jdeveloper.10.1.xxxxx` directory.

4. Save the `tools.xml` file in the `<jdeveloper_home>/jdev/system/oracle.jdeveloper.10.1.xxxxx` directory.

5. Start Oracle JDeveloper. In JDeveloper window, select Tools, External Tools. The following two options are displayed:
   - Submit this File into OER
   - Submit this Project into OER

6. Select **Submit this File into OER** and click **Edit**. The Edit External Tool dialog is displayed.

7. Click the **Properties** tab, and configure the missing properties to point to your Oracle Enterprise Repository server.

8. To point to an external HarvesterSettings.xml file, add a property called `settings.file`, and set the value to the URL of the settings file, for example, `c:\temp\MyHarvesterSettings.xml`.

9. Repeat Steps 6 to 8 for the Submit this Project into OER option.

10. In the Applications Navigator, select a file, and right-click and then select **Submit this File into OER** or **Submit this Project into OER**.
11. In the Edit External Tool dialog, click the **Process** tab.

12. Click **Change** to change the JDK version to 1.6, and then click **OK**.

---

**Note:** Oracle Enterprise Repository browsing is not supported from Oracle JDeveloper 10g. To make 10g assets as consumable:

- Harvest assets from JDeveloper 10g.
- Reharvest from SOA runtime for just WSDLs.

Also, the assets that are harvested from JDeveloper 10g or 11g cannot be used for consumption.

---

### 7.2 Configuring Eclipse

The Harvester integrates the Oracle SOA Suite artifacts to Oracle Enterprise Repository to support the visibility, impact analysis, and reusability use cases. This section describes the various steps involved in configuring Eclipse to support integration with Oracle Enterprise Repository:

- **Section 7.2.1, "Enable Harvesting in Eclipse"
- **Section 7.2.2, "Configure the Oracle Enterprise Repository Plug-ins"
- **Section 7.2.3, "Configure the Oracle Enterprise Repository Preferences"
- **Section 7.2.4, "Enable Automatic Usage Detection"

### 7.2.1 Enable Harvesting in Eclipse

This section describes how to harvest sample artifacts into Oracle Enterprise Repository using Eclipse:

- **Section 7.2.1.1, "Setting up Eclipse Environment to use Harvester as an "External Program""
- **Section 7.2.1.2, "Harvesting in Eclipse Environment using "External Program"
- **Section 7.2.1.3, "Setting up Eclipse Environment to use Harvester via ANT"
- **Section 7.2.1.4, "Harvesting in Eclipse Environment using ANT"

#### 7.2.1.1 Setting up Eclipse Environment to use Harvester as an "External Program"

1. In Eclipse, click **Run, External Tools**. The External Tools dialog is displayed.
2. Right-click **Program**, and then select **New**.
3. Enter the following details in the External Tools dialog, as shown in **Figure 7–5**.
   - In the Name field, type **Submit this project to Oracle Enterprise Repository**.
   - In the Location field, type `<Harvester Home>\harvest.bat`. You can also browse the `harvest.bat` file using the **Browse** button.
   - In the Working Directory field, type `<Harvester Home>`. You can also browse the working directory using the **Browse** button.

---

**Note:** Oracle JDeveloper 10g does not support multi-select correctly for external tools. Even if you multi-select, only one file is harvested.
In the **Arguments** field, type `-dir ${project_loc}`.

**Figure 7–5  External Tools Dialog**

4. Click the **Common** tab.

5. In the Display in favorites menu pane, enable **External Tools**, as shown in **Figure 7–6**.
7.2.1.2 Harvesting in Eclipse Environment using "External Program"

1. In Eclipse, click New, Project, General, Project to create a new eclipse project.

2. Browse for any WSDL file in the file system, copy it and paste into the just created project.

3. Select the project and then click Submit this project to Oracle Enterprise Repository. This invokes the Harvester and submits all the artifacts in the project, as shown in Figure 7–7.

**Note:** You must install Harvester in the same machine where you have installed eclipse.
4. Repeat the above steps to create another program called Submit this file to Oracle Enterprise Repository by using `- dir ${resource_loc}` instead of the `${project_loc}` variable and to submit the individual files.

### 7.2.1.3 Setting up Eclipse Environment to use Harvester via ANT

1. Copy the Harvester directory to any project in the Eclipse workspace.

2. In the Eclipse workspace, click **Window, Preferences**. The Preferences dialog is displayed.

3. Select **Ant, Runtime**. The Runtime page is displayed.

4. Select **Global Entries** and then click **Add Folder**. The Browse for Folder dialog is displayed.

5. Select the harvester and click **OK**.

6. In the Eclipse workspace, click **Window, Show View, Other**, and then **Ant**. The Ant view is displayed.

7. Right-click the ANT view window and select **Add Build Files** option. The Buildfile Selection dialog is displayed.

8. Select **harvester-ant.xml** from the Harvester directory, as shown in **Figure 7–8**.
9. In the ANT window, expand the harvester node and right-click *introspect-file* and select *Run As, Ant Build*, as shown in Figure 7–9. The External Tools dialog is displayed.

\[Figure 7–9\] The ANT Window

10. Click *Add External JARs* and select all the jars under `<Harvester Home>` and `<Harvester Home>\lib` directories.

11. Click the *Add Property* button and add the following properties as shown below:
   - `file.path = ${resource_loc}`
   - `repository.url = http://localhost:7101/oer/`
   - `repository.username = admin`
   - `repository.password = admin`

After the configuration of the Properties tab, the External Tools dialog is displayed, as shown in Figure 7–10.
7.2.1.4 Harvesting in Eclipse Environment using ANT

1. In Eclipse, click New, Project, General, Project to create a new eclipse project.

2. Browse for any WSDL file in the file system, copy and paste it into the project that you just created.

3. Select the project and then click Submit this file to Oracle Enterprise Repository using ANT. This invokes Harvester and submits all the artifacts in the project, as shown in Figure 7–11.

7.2.2 Configure the Oracle Enterprise Repository Plug-ins

This section describes the steps to configure the Oracle Enterprise Repository Plug-ins for repository access and the prerequisites to enable this configuration. This section contains the following topics:
7.2.2.1 Configuring the Oracle Enterprise Repository Plug-ins for Repository Access
For instructions on installing the Oracle Enterprise Repository plug-ins for repository access within the Eclipse-based Enterprise Repository Plug-in for Eclipse, see Oracle Fusion Middleware Installation Guide for Oracle Enterprise Repository.

Prerequisites for Using the Oracle Enterprise Repository Plug-ins for Eclipse
For instructions about installing the Oracle Enterprise Repository plug-in for repository access, see http://download.oracle.com/otn_software/oer/eclipse.

Uninstalling the Oracle Enterprise Repository Plug-ins
The Oracle Enterprise Repository plug-in for Eclipse can be uninstalled the same as any other Eclipse plug-in through the Eclipse software update menu.

Installing Products After Installing Oracle Enterprise Repository
If Oracle Service Bus applications are installed after the Oracle Enterprise Repository plug-in is installed, then Eclipse must be launched using the -clean flag.

7.2.2.2 Prerequisites for Using the Oracle Enterprise Repository Plug-ins for Eclipse
You should complete the prerequisites described in this section before using the Oracle Enterprise Repository plug-ins for Eclipse:

- Section 7.2.2.2.1, "Assign Users to an Oracle Enterprise Repository Project"
- Section 7.2.2.2.2, "Enabling the Assets-in-Progress Properties"
- Section 7.2.2.2.3, "SiteMinder"
- Section 7.2.2.2.4, "Java JDK"
- Section 7.2.2.2.5, "XML Parsing"

7.2.2.2.1 Assign Users to an Oracle Enterprise Repository Project
In order to download assets from the repository, users must be assigned to at least one Oracle Enterprise Repository project. An Oracle Enterprise Repository project administrator can assign users to projects using the Oracle Enterprise Repository Projects page.

Obtain the Eclipse integration path from the Oracle Enterprise Repository administrator. (For example, http://appserver.example.com/oer-web/eclipse).

7.2.2.2.2 Enabling the Assets-in-Progress Properties
Two system settings must be enabled in order to activate Assets-in-Progress when using the Oracle Enterprise Repository Plug-in for Eclipse.

This procedure is performed on the Oracle Enterprise Repository Admin screen.

1. Click System Settings.
2. Click General Settings in the System Settings section.
3. Enter the `cmee.asset.in-progress` property in the **Enable New System Setting** box and click **Enable** to reveal this hidden property.

4. Ensure the Asset in Progress property is set to **True**.

5. Click **Save**.

6. Enter the `cmee.asset.in-progress.visible` property in the **Enable New System Setting** box and click **Enable** to reveal this hidden property.

7. Ensure the Asset in Progress property is set to **True**.

8. Click **Save**.

The Registration Status list will now appear in the Search section on the Oracle Enterprise Repository Assets screen. For more information about Assets-in-Progress, see *Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository*.

### 7.2.2.2.3 SiteMinder

If Oracle Enterprise Repository is or will be configured to be secured by SiteMinder, the policy server must be configured to ignore (or unprotect) the following URL:

http://appserver.example.com/oer-web/eclipse/

### 7.2.2.2.4 Java JDK

The Java Cryptography Extension (JCE) is required. It is provided in JDK v1.4, and is available as an optional package in JDK 1.2.x through 1.5.x. Note that Oracle Enterprise Repository plug-ins for use with Eclipse 3.x require JDK v 1.5.x or later.

### 7.2.2.2.5 XML Parsing

Since Editor and Viewer metadata is represented as CDATA-escaped XML, some XML parsers may exceed their entity expansion limit when communicating with Oracle Enterprise Repository. For example, if you have defined a large number of Asset Types in Oracle Enterprise Repository, then you may need to increase the Entity Expansion Limit of your XML parser.

On some popular parsers, the default entity expansion limit is set to 64,000. This limit can be increased on JAXP-compliant processors by passing a command-line parameter called `entityExpansionLimit`. The `entityExpansionLimit` can be increased by passing a VM argument on the Eclipse command-line (modify the Eclipse desktop shortcut). For example, set the target of the shortcut to the following:

```
c:\eclipse\eclipse.exe -debug -consolelog -vmargs -DentityExpansionLimit=1048576
```
1. In the Credentials area, as shown in Figure 7-12, enter the server location and login credentials, as follows:
   - **Repository URL**: the URL of the repository server. The URL must include the host, port, and Oracle Enterprise Repository server name, for example, http://localhost:7001/oer.
   - **User Name**: user name to gain access to the repository.
   - **Password**: password to gain access to the repository.

   ![Figure 7–12 Establish Enterprise Repository Connection](image)

2. Click the Establish Connection button to ensure enterprise repository connectivity.
   
   If a connection cannot be established, an appropriate error message will be displayed.

3. In Figure 7-13, once connectivity is established, you can either:
   - Click Finish to exit.
   - Click Next to select your workspace preferences (skip to Step 4).

   ![Figure 7–13 Establish Enterprise Repository Connection](image)

---

**Note:** If credential information had been specified in a previous session, the wizard will display this persisted information when it is launched.
4. Once connectivity is established, you can specify your workspace preferences:

- Select a Repository project in Oracle Enterprise Repository that the submitted model will be associated with. Asset usage is tracked in the repository and attributed to repository projects, which typically represent software development programs, business initiatives, etc.

- Enable usage detection: If you selected an Oracle Enterprise Repository project as the workspace default, usage detection will be enabled for the default Oracle Enterprise Repository project. For more information about workspace preferences, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.

5. Click Finish to exit.

### 7.2.4 Enable Automatic Usage Detection

Oracle Enterprise Repository can automatically detect asset reuse within the development environment. This allows development teams to ensure that they get asset reuse credit, regardless of whether the assets have been downloaded through Oracle Enterprise Repository or pulled from another source, such as the developer’s desktop. Automated Usage Detection relies on a fingerprinting process, called Software File Identification (SFID), which tags selected files within an asset with a unique ID. This SFID is then used to detect when and where an asset is used, even if the asset was acquired through means other than the Oracle Enterprise Repository Use - Download process. An instance of usage is recorded by Oracle Enterprise Repository when tagged files within the asset are brought into the developer’s IDE, and a new build or build clean occurs.

For more information, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.

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**Note:** Automated Usage Detection requires the installation of the Oracle Enterprise Repository Plug-in for Eclipse, and is currently compatible only with Eclipse and Eclipse-based IDEs.
1. On the Window menu, click **Preferences**.

2. Select **Oracle Enterprise Repository**.

3. Select **Workspace Automatic Usage Detection**. The Workspace Automatic Usage Detection screen is displayed, as shown in **Figure 7–14**.

**Figure 7–14  Preferences - Workspace Automatic Usage Detection**

4. Click the **Detect usage in workspace projects** option, and then activate the desired usage detection features, as appropriate:

   - Enable usage detection in new workspace projects by default - monitors new projects
   - Detect usage of files on classpath - monitors files on classpath.
   - Detect usage of Java Runtime JARs - monitors Java Runtime JARs
   - Cache calculated SFIDs (recommended) - caches calculated SFIDs (enhances performance)
   - Detect usage of files matching pattern - monitors files matching specified patterns

5. Enter the appropriate information in the File Pattern text boxes:
   - **Include File Pattern** - Includes indicated file pattern
   - **Exclude File Pattern** - Excludes the indicated file pattern

6. Specify which project directories will be targets for automatic usage detection by using the individual check boxes or by using the Select All and/or Unselect All buttons.

7. Click **OK** when finished.
7.3 Configuring VS .NET

Oracle Enterprise Repository integration with Visual Studio .NET provides users with the ability to easily search for and use assets from the repository without leaving the VS .NET IDE environment. Assets and any associated artifacts are downloaded directly to your VS .NET solution. Repository Access within the VS .NET solution also provides a view into Oracle Enterprise Repository that enables you to download artifacts and assets from the repository, query the repository, and view the contents of the repository.

This section contains the following topics:

■ Section 7.3.1, "Enable Harvesting in VS .NET"
■ Section 7.3.2, "Configure the Oracle Enterprise Repository Plug-ins"
■ Section 7.3.3, "Configure the Connection to Oracle Enterprise Repository"
■ Section 7.3.4, "Assign an Oracle Enterprise Repository Project to a .NET Solution"
■ Section 7.3.5, "Enable Automatic Usage Detection"

7.3.1 Enable Harvesting in VS .NET

1. In Microsoft Visual Studio, click Tools, External Tools. The External Tools dialog is displayed.
2. Click Add. A entry is added to the Menu Contents pane.
3. Enter the following details in the External Tools dialog, as shown in Figure 7–15:
   ■ In the Title field, type OER - Harvest.
   ■ In the Command field, click the Browse button at the end of the field and select the harvest.bat file in the harvester directory.
   ■ In the Arguments field, type the -dir parameter. Click the right-arrow at the end of this field and select ItemPath from the menu.
   ■ In the Initial Directory field, type the location of the harvester directory.
   ■ Select the Use Output Window option. This option enables you to monitor progress.
4. Click OK.

5. Select the WSDL file in the Microsoft Visual Studio and click Tools, OER - Harvest. The Output window is displayed with the Shutdown and Clean up messages indicating that the introspection is complete.

6. Open the Oracle Enterprise Repository home page with your username/password credentials.

7. In Assets pane, enter the name of the WSDL as the search criteria in the Enter Search String field, and then click Search. The search results are displayed in the right pane.

8. Select the service in the search results section, the details of the service are displayed in the bottom pane.

9. Click the Navigator button to view the relationships.

10. In the Oracle Enterprise Repository main page, click Admin, and then System Settings. The System Settings page is displayed.

11. Enter Show in the Search field, and set the Show System-Supplied Relationships option to True.

12. Click Save at the bottom of the page.

13. In the Oracle Enterprise Repository main page, click Assets and repeat the same search that you performed in step 7. The automatic relationships that were not imported earlier are now imported.

7.3.2 Configure the Oracle Enterprise Repository Plug-ins

Oracle Enterprise Repository can automatically detect asset reuse within the development environment. This allows development teams to ensure that they get asset reuse credit, regardless of whether the assets have been downloaded through Oracle Enterprise Repository. For more information, see Section 7.3.5, "Enable Automatic Usage Detection".
7.3.2.1 Prerequisites
To configure the Oracle Enterprise Repository plug-ins, you need the following prerequisites:

- Microsoft Visual J# 2005 runtime. (If J# is not installed on your machine, the installer will prompt you to download the correct version from Microsoft.)
- The VS .NET Always show solution option should be selected (Tools -> Options -> Projects and Solutions -> General).
- Users must be assigned to at least one Oracle Enterprise Repository project. A Project Administrator can assign users to projects using the Oracle Enterprise Repository Projects page.
- If your Oracle Enterprise Repository is or will be secured by Siteminder, you will need to configure the policy server to ignore (or unprotect) the following URL to allow the OpenAPI integration to function properly:
  - http://appserver.example.com/OER/services/

7.3.2.2 Installation
To install VS .NET plug-in, perform the following steps:

1. Download the VS .NET plug-in Zip file from your Oracle Enterprise Repository instance at the following URL:
   http://appserver.example.com/oer-web/integration/dotnet/OER103-VisualStudioAddin.zip
3. Locate and run the setup.exe program.
4. Follow the prompts, as shown in Figure 7–16, to select installation parameters.

Figure 7–16 Oracle Enterprise Repository Adapter Add-in for Visual Studio

5. Click Finish to complete the installation.
6. Follow the instructions in Section 7.3.3, "Configure the Connection to Oracle Enterprise Repository" to configure and establish a connection to an Oracle Enterprise Repository instance from VS. NET.

7.3.3 Configure the Connection to Oracle Enterprise Repository

Follow these steps to configure and establish a connection to an Oracle Enterprise Repository instance from VS. NET.

1. Launch Visual Studio .NET.
2. Open the Tools menu and click Options.
3. On the list of options, click the OER Add-in for Visual Studio .NET option, as shown in Figure 7–17, and provide the required login information.

Figure 7–17 The Options Dialog

- **OER URL**: The URL of the Oracle Enterprise Repository instance, for example, http://appserver.example.com/OER.

  **Note**: Do not include index.jsp used in the default home page as part of the URL.

- **User Name**: The user name to connect as.
- **User Password**: The password to connect with. Passwords are case-sensitive.
- **Establish Connection**: Click to verify a valid connection.
- **Automatically register downloaded Asset files**: If selected, downloaded asset files are registered with the Windows Registry, as appropriate. This may be overridden on a case-by-case basis for each asset download.

4. Click the Establish Connection button to connect to the Oracle Enterprise Repository instance you specified.
5. Optionally, click the Advanced button to enable additional Oracle Enterprise Repository options:
   - Usage detection for VS .NET Solution Projects
- Automated usage detection of referenced DLLs, WSDLs, and allow local caching of SFIDs (if SFID is enabled at your installation)
- File name patterns to include and exclude

6. Click OK when finished.

### 7.3.4 Assign an Oracle Enterprise Repository Project to a .NET Solution

In order to track the usage of downloaded assets, an Oracle Enterprise Repository project must be assigned to a .NET solution.

**Note:** Before using this feature, you must be assigned to at least one Oracle Enterprise Repository Project by a Project Administrator.

1. Open the .NET Solution Explorer.
2. Right-click a solution in the file tree and select the Oracle Enterprise Repository Add-in for Visual Studio .NET option from the context menu.
3. Click Assign OER Project from the submenu, as shown in Figure 7–18.

**Figure 7–18 The Solution Explorer Window**

4. In the Project Selection window, use the Select the Oracle Enterprise Repository Project list to view the Oracle Enterprise Repository projects that you are assigned to, as shown in Figure 7–19.
5. Select an Oracle Enterprise Repository project from the list.
6. Click **Finish** to save your changes.

### 7.3.5 Enable Automatic Usage Detection

Follow these steps to enable advanced configuration options, such as enabling automatic usage detection of DLLs, WSDLs, local caching of SFIDs, and file pattern detection.

#### 7.3.5.1 Overview of SFID

If SFID is enabled at your installation, Oracle Enterprise Repository can automatically detect asset reuse within the development environment. This allows development teams to ensure that they get asset reuse credit, regardless of whether the assets have been downloaded through Oracle Enterprise Repository. Automated Usage Detection relies on a fingerprinting process, called Software File Identification (SFID), which tags selected files within an asset with a unique ID. This SFID is then used to detect when and where an asset is used, even if the asset was acquired through means other than the Oracle Enterprise Repository Use - Download process. An instance of usage is recorded by Oracle Enterprise Repository when tagged files within the asset are brought into the developer's IDE, and a new build or build clean occurs.

#### 7.3.5.2 Configuring Automatic Usage Detection

1. Launch Visual Studio .NET.
2. Open the **Tools** menu and click **Options**.
3. In the list of options, click **Oracle Enterprise Repository Add-in for Visual Studio .NET** to reopen the Login window.
4. Click the **Advanced Options** button to open the Advanced Settings window. Use the Detect Usage tab to enable usage detection for VS .NET Solution Projects, as shown in Figure 7–20.

*Figure 7–20  The Advanced Settings Dialog - Detect Usage Tab*

5. Click the **Automated Usage Detection** tab to enable usage detection of referenced DLLs, WSDLs, and allow local caching of SFIDs, as shown in Figure 7–21.

*Figure 7–21  The Advanced Settings Dialog - Automated Usage Detection Tab*

6. Click the **File Pattern Detection** tab to specify include and exclude file name patterns, as shown in Figure 7–22.
Figure 7–22  The Advanced Settings Dialog - File Pattern Detection Tab

7. Click **Done** to save your settings.
This chapter describes using the various IDEs to interact with Oracle Enterprise Repository. This chapter provides an overview of the production and consumption processes, and encompasses the development environment use cases. It contains the following topics:

- Section 8.1, "Using Oracle JDeveloper"
- Section 8.2, "Using Eclipse"
- Section 8.3, "Using VS .NET"

### 8.1 Using Oracle JDeveloper

The Oracle Enterprise Repository provides a flexible meta model for cataloguing all assets within the SOA ecosystem and their dependencies. It is primarily used during the plan, design, and build phase of the lifecycle as a single source of truth for service and composite application development.

Oracle SOA Suite provides a complete set of service infrastructure components for designing, deploying, and managing composite applications. Oracle SOA Suite enables services to be created, managed, and orchestrated into composite applications and business processes. Composites enable you to easily assemble multiple technology components into one SOA composite application. Oracle SOA Suite plugs into heterogeneous IT infrastructures and enables enterprises to incrementally adopt SOA.

You can use Oracle SOA Suite with the following versions of Oracle Enterprise Repository:

- Oracle Enterprise Repository 10.3 (with Oracle WebLogic Server 10.3)
- Oracle Enterprise Repository 11g

This section describes the following use cases:

- Section 8.1.1, "Harvest Artifacts"
- Section 8.1.2, "Search Oracle Enterprise Repository"
- Section 8.1.3, "View Asset Details"
- Section 8.1.4, "Download Artifacts"
- Section 8.1.5, "Prescriptive Reuse"
8.1.1 Harvest Artifacts

Oracle Enterprise Repository can harvest BPEL, WSDL, XSD, and XSLT files and file directories. After harvesting, Oracle Enterprise Repository automatically creates assets, populates asset metadata, and generates relationship links based on the information in the artifact files. The harvesting function is available from the command line, and can be integrated into Oracle JDeveloper or into the build process.

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**Note:** The Harvester is not restricted to Oracle products, it can be used to harvest standards-based artifacts generated from any tooling.

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You can publish or harvest a Oracle SOA Suite project to the Oracle Enterprise Repository either from the command-line or from Oracle JDeveloper, or using an Ant task. The Harvester harvests Oracle SOA Suite artifacts, including BPEL, WSDL, XSD and XSLT files and file directories, and automatically creates assets, populates asset metadata, and generates relationship links based on the information in the artifact files.

To publish a SOA project from Oracle JDeveloper 11g R1, perform the following steps:

1. In Oracle JDeveloper, right-click the SOA project and select **Harvest SOA Composite Project**. The Harvest SOA Project dialog is displayed.
2. Click **OK**. This runs an Antscript to harvest the SOA composite to Oracle Enterprise Repository.

For more information about harvesting artifacts from the JDeveloper 11g R2 version, see Section 7.1.1, "Integrating with Oracle JDeveloper 11g R2".

For more information about harvesting artifacts from the JDeveloper 10g version, see **Section 7.1.3, "Integrating with Oracle JDeveloper 10g"**.

8.1.2 Search Oracle Enterprise Repository

You can access the assets and artifacts available in the Oracle Enterprise Repository through Oracle JDeveloper. Through Oracle JDeveloper, you can search for assets matching various criteria or view assets that may be of interest to a development project.

To search for assets in Oracle Enterprise Repository, perform the following steps:

1. In Oracle JDeveloper, click **Resource Palette**. The Resource Palette tab with the IDE Connections is displayed.
2. In the Search text field, enter the search criteria, for example, the name of the asset that you want to view the details for, and click **Start Search**. The Search Results pane is displayed with the assets.

8.1.3 View Asset Details

For selected assets, you can view asset details such as description, usage history, expected savings, and relationships. Within the asset metadata, links to the supporting documentation, user guides, test cases are provided to better enable you to reuse the existing functionality.
8.1.4 Download Artifacts

You can download an asset’s artifacts (i.e., payload) into your project. Typically an asset payload is the functionality that you need to use a service (such as a WSDL file) or incorporate into your code base (such as a binary or a BPEL file).

You can consume services, schemas, xslts and events from Oracle Enterprise Repository. To track the usage of an asset, you have to first associate a JDeveloper application with Oracle Enterprise Repository project. This section contains the following topics:

- Section 8.1.4.1, "Associating JDeveloper Application with Oracle Enterprise Repository"
- Section 8.1.4.2, "Consuming WSDL/Service from Oracle Enterprise Repository"

8.1.4.1 Associating JDeveloper Application with Oracle Enterprise Repository

To associate JDeveloper application with Oracle Enterprise Repository project, perform the following steps:

1. In Oracle JDeveloper, click Application, and then Application Properties. The Application Properties dialog is displayed.
2. Select Repository. The Repository page is displayed.

**Note:** To consume assets from Oracle Enterprise Repository within JDeveloper 11g, one has to configure application-level properties and add repository.

3. Select the following options, as shown in Figure 8–1.
   - Repository Connection: Select the Oracle Enterprise Repository connection that you want to use for usage tracking.
   - Repository Project: Select the Oracle Enterprise Repository project that you want to use for usage tracking.
4. Click OK.
You can now consume assets from the connection that you have selected. And usage is added to the Oracle Enterprise Repository project that you selected.

8.1.4.2 Consuming WSDL/Service from Oracle Enterprise Repository
To consume a WSDL file or a service from Oracle Enterprise Repository, perform the following steps:

1. In Oracle JDeveloper, double-click the composite.xml file. The composite.xml page is displayed.
2. Drag and drop the Web Service component from the Component Palette to the External References swim lane. The Create Web Service dialog is displayed.
3. Click the Finding Existing WSDLs icon at the end of the WSDL URL field. The SOA Resource Browser dialog is displayed.
4. Select Resource Palette from the list and then select IDE Connections, Oracle Enterprise Repository, <Connection Name>, Asset Types, Service, as shown in Figure 8–2.
5. Choose the service that you want to invoke/consume.

If the service has only one WSDL or UDDI key associated with it, then the same WSDL or UDDI key will be used to create the reference. If service has more than one WSDL and/or UDDI key associated with it, then the Choose WSDL dialog is displayed, as shown in Figure 8–3.

You need to select one of the URLs/UDDI keys to consume. For resolving UDDI keys in JDeveloper, you have to create a UDDI connection prior to creating the reference, without which you can not select UDDI keys.
8.1.5 Prescriptive Reuse

Through the Oracle Enterprise Repository, analysts, architects, technical leads, and others who are involved in the design stages of a project can create a list of assets that fulfills a project’s requirements. The list of assets are captured in compliance templates in the repository and the compliance templates are associated with an Oracle Enterprise Repository project.

From within the Oracle JDeveloper, you can view a list of assets appearing in all of the Compliance Templates assigned to your project. You can see which of the assets have been used and/or other project members. For more information about compliance templates, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.

8.2 Using Eclipse

The Oracle Enterprise Repository plug-in for Eclipse development environment use cases are as follows:

- Section 8.2.1, "Submit Files"
- Section 8.2.2, "Harvest Artifacts"
- Section 8.2.3, "Search Oracle Enterprise Repository"
- Section 8.2.4, "View Asset Details"
- Section 8.2.5, "Download Artifacts"
- Section 8.2.6, "Prescriptive Reuse"
- Section 8.2.7, "Automatic Usage Detection"

8.2.1 Submit Files

The Oracle Enterprise Repository plug-in for Eclipse allows you to select files to submit to the Oracle Enterprise Repository. It packages the files into a .zip format for archive submission. The Archive Submission Wizard allows you to submit single and/or compound-payload assets to Oracle Enterprise Repository via an archive ZIP file.

To submit assets to Oracle Enterprise Repository via an archive ZIP file, perform the following steps:

1. Right-click an Eclipse project and select Submit to Oracle Enterprise Repository from the shortcut menu.
2. In the Archive Name field, enter the path to an existing project archive field or browse to an archive using the Ellipses button. You can also create a new archive file. When an existing file is selected, its fully qualified path is placed in the Archive Name text field. A valid project archive must have a .zip file extension.
3. When selecting an existing archive, click OK to confirm that it is okay to overwrite the selected project archive.
4. Use the resulting project folder structure to select at least one file from the project to submit to Oracle Enterprise Repository.
5. If necessary, you can click the Select Types button to open a dialog where can select certain file types to include in the archive.
6. After selecting the files you want to include in the archive, click Next. All artifacts selected from the project will be zipped into the archive file.
7. After the archive and its contents have been specified, you can enter asset submission data, such as a version number, the type of asset to be submitted, a description, and associated comments.

8. Click Finish.

9. Click OK in the confirmation window to complete the submission process.

8.2.2 Harvest Artifacts

Oracle Enterprise Repository can harvest BPEL, WSDL, XSD, and XSLT files and file directories. After harvesting, Oracle Enterprise Repository automatically creates assets, populates asset metadata, and generates relationship links based on the information in the artifact files. The harvesting function is available from the command line, and can be integrated into Eclipse or into the build process.

To publish/harvest a project, perform the following steps:

1. In Eclipse, right-click the project and select Submit this project to Oracle Enterprise Repository. The Submit this Project to Oracle Enterprise Repository dialog is displayed.

2. Click OK. This runs a script to harvest the project to Oracle Enterprise Repository.

8.2.3 Search Oracle Enterprise Repository

You can access the assets and artifacts available in the Oracle Enterprise Repository through the Oracle Enterprise Repository plug-in for Eclipse. Through Eclipse, you can search for assets matching various criteria or view assets that may be of interest to a development project.

To search for the asset details, perform the following steps:

1. In Eclipse, click Window, Show View.

2. Select Other.

3. Select the Enterprise Repository Access option. The Enterprise Repository Access view is displayed as a tabbed pane containing Search and Project Team Assets panes.

   The Search tab enables querying of assets and displays results based upon specified criteria. The Search tab displays a toolbar at the top that is visible whether the active view is the Query pane or the Results pane. You can toggle between the two displays by clicking either the Query link or the Results link, depending on which pane is active at the time.

8.2.4 View Asset Details

For selected assets, you can view asset details such as description, usage history, expected savings, and relationships. Within the asset metadata, links to the supporting documentation, user guides, test cases are provided to better enable you to reuse the existing functionality.

To view the asset details, perform the following steps:

1. In Eclipse, click Window, Show View.

2. Select Other.
3. Select the **Enterprise Repository Access** option. The Enterprise Repository Access view is displayed as a tabbed pane containing Search and Project Team Assets panes.

The Search tab enables querying of assets and displays results based upon specified criteria. The Search tab displays a toolbar at the top that is visible whether the active view is the Query pane or the Results pane. You can toggle between the two displays by clicking either the Query link or the Results link, depending on which pane is active at the time.

4. Right-click one of the search results and select **Show in Asset Details View**. The Asset Details view for the selected asset is displayed, as shown in **Figure 8–4**.

**Figure 8–4 Asset Details Dialog**

5. Select an asset in the search results and click the **Display the asset properties and relationship views button** to view the asset relationships. This Properties tab is displayed with the asset properties and the the Enterprise Repository Asset Relations tab is displayed with the relationships and relationship roles for the selected asset, as shown in **Figure 8–5** and **Figure 8–6** respectively.
8.2.5 Download Artifacts

You can download an asset’s artifacts (i.e., payload) into your project. Typically an asset payload is the functionality that you need to use a service (such as a WSDL file) or incorporate into your code base (usually a binary). To download artifacts, perform the following steps:

1. Query the repository for the desired asset(s), as described in Section 8.2.3, "Search Oracle Enterprise Repository".

2. Right-click the appropriate asset in the Results pane and if there are available artifacts, select **Download Artifacts** from the shortcut menu to open the Download Artifacts window.

3. In the Download Location section:
   - Use the **Download Folder** field to navigate to an Eclipse project and select the destination folder for the download.
   - Select the **Overwrite Existing Files** option to overwrite existing versions of the artifacts in the selected project folder.

4. In the Repository Governance section:
   - Select a valid project from the Repository Project list.
Select the **Subscribe to Associated Assets** option to subscribe to all of the selected assets that had files associated with them, plus any associated artifact assets and dependencies.

5. Verify your selection in the list of artifacts to download, and then click **OK**. Artifacts associated with the selected asset will be downloaded to the specified location.

6. Click **OK** in the status confirmation window.

7. Open the selected destination folder to confirm the presence of the selected artifact file(s).

### 8.2.6 Prescriptive Reuse

Through the Oracle Enterprise Repository, analysts, architects, technical leads, and others who are involved in the design stages of a project can create a list of assets that fulfills a project’s requirements. The list of assets are captured in compliance templates in the repository and the compliance templates are associated with an Oracle Enterprise Repository project.

From within the Oracle Enterprise Repository plug-in for Eclipse, you can view a list of assets appearing in all of the Compliance Templates assigned to your project. You can see which of the assets have been used and/or other project members. For more information about compliance templates, see *Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository*.

For prescriptive reuse of assets, perform the following steps:

1. In Eclipse, click **Window, Show View**.

2. Select **Other**.

3. Select the **Enterprise Repository Access** option. The Enterprise Repository Access view is displayed as a tabbed pane containing Search and Project Team Assets panes.

   The Project Team Assets tab allows you to view all assets associated with a specified Oracle Enterprise Repository project.

4. From the Repository Project menu, select a project from the set of all enterprise repository projects associated with the current repository connection. The items in the list are prefixed with the name of the repository in which the associated project resides.

5. Click the **Query** button to query the enterprise repository for all assets associated with the specified repository project.

   If a repository connection has been established, the Project Team Assets table is populated with the set of assets associated with the specified project. Each of the columns in the table identifies how the asset relates to the project in the repository. You can also sort each column using the column header.

6. If necessary, click the **Refresh** button to repopulate the table with the results of this query.

### 8.2.7 Automatic Usage Detection

Oracle Enterprise Repository can automatically detect asset reuse within the development environment. This allows development teams to ensure that they get asset reuse credit, regardless of whether the assets have been downloaded through Oracle Enterprise Repository or pulled from another source, such as the developer’s...
Automated Usage Detection relies on a fingerprinting process, called Software File Identification (SFID), which tags selected files within an asset with a unique ID. This SFID is then used to detect when and where an asset is used, even if the asset was acquired through means other than the Oracle Enterprise Repository Use-Download process. An instance of usage is recorded by Oracle Enterprise Repository when tagged files within the asset are brought into the Oracle Enterprise Repository plug-in for Eclipse, and a new build or build clean occurs. For more information, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.

To configure automatic usage detection, perform the following steps:

1. In Eclipse, click Preferences from the Window menu. The Preferences dialog is displayed.

2. Select Oracle Enterprise Repository and then Workspace Automatic Usage Detection. The Workspace Automatic Usage Detection page is displayed.

3. Click the Detect Usage in Workspace Projects option, and then activate the desired usage detection features, as appropriate:
   - Enable usage detection in new workspace projects by default - monitors new projects
   - Detect usage of files on classpath - monitors files on classpath
   - Detect usage of Java Runtime JARs - monitors Java Runtime JARs
   - Cache calculated SFIDs (recommended) - caches calculated SFIDs (enhances performance)
   - Detect usage of files matching pattern - monitors files matching specified patterns

4. Enter the appropriate information in the File Pattern text boxes:
   - Include File Pattern - Includes indicated file pattern
   - Exclude File Pattern - Excludes the indicated file pattern

5. Specify which project directories will be targets for automatic usage detection by using the individual check boxes or by using the Select All and/or Unselect All buttons.

6. Click OK when finished.

### 8.3 Using VS .NET

The Oracle Enterprise Repository plug-in for VS .NET development environment use cases are as follows:

- Section 8.3.1, "Submit Files"
- Section 8.3.2, "Harvest Artifacts"
- Section 8.3.3, "Search Oracle Enterprise Repository"
- Section 8.3.4, "View Asset Details"
- Section 8.3.5, "Download Artifacts"
- Section 8.3.6, "Automatic Usage Detection"
8.3.1 Submit Files

The Oracle Enterprise Repository plug-in for VS .NET allows you to select files to submit to the Oracle Enterprise Repository. It packages the files into a .zip format for archive submission. The Archive Submission Wizard allows you to submit single and/or compound-payload assets to Oracle Enterprise Repository via an archive ZIP file.

8.3.2 Harvest Artifacts

Oracle Enterprise Repository can harvest BPEL, WSDL, XSD, and XSLT files and file directories. After harvesting, Oracle Enterprise Repository automatically creates assets, populates asset metadata, and generates relationship links based on the information in the artifact files. The harvesting function is available from the command line, and can be integrated into VS .NET or into the build process.

To publish/harvest a project, perform the following steps:

1. In VS .NET, right-click the project and select **Submit this project to Oracle Enterprise Repository**. The Submit this Project to Oracle Enterprise Repository dialog is displayed.

2. Click **OK**. This runs a script to harvest the project to Oracle Enterprise Repository.

8.3.3 Search Oracle Enterprise Repository

You can access the assets and artifacts available in the Oracle Enterprise Repository through the Oracle Enterprise Repository plug-in for VS .NET. Through VS .NET, you can search for assets matching various criteria or view assets that may be of interest to a development project.

Perform a simple keyword search in VS .NET to locate an asset in Oracle Enterprise Repository in order to view the asset's metadata.

1. Open the View menu.

2. Click the **Oracle Enterprise Repository Add-in for Visual Studio .NET** option and then select **View Asset Search Window** from the submenu. The Oracle Enterprise Repository Asset Search window is displayed, as shown in Figure 8–7.

![Figure 8–7 OER Asset Search Dialog](image)

3. Type a keyword or phrase into the Keyword text box.
4. Use the Type and Function lists to refine the search.

5. Click the Search button. The Oracle Enterprise Repository Search Results window displays a list of all assets matching the search criteria, as shown in Figure 8–8.

**Figure 8–8 OER Search Results Window**

<table>
<thead>
<tr>
<th>OER Search Results (22 records found)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Sample Application - ADCS</td>
</tr>
<tr>
<td>Sample Application - Commercial Card Authorization System</td>
</tr>
<tr>
<td>Sample Artifact - DTD - Inventory Item</td>
</tr>
<tr>
<td>Sample Artifact - WS-Policy - Customer Information Encryption Policy</td>
</tr>
<tr>
<td>Sample Artifact - WSDL - Account Detail</td>
</tr>
<tr>
<td>Sample Artifact - XSD - Customer</td>
</tr>
<tr>
<td>Sample Binding - SOAP/HTTP</td>
</tr>
<tr>
<td>Sample Business Process - Order Verification Process</td>
</tr>
<tr>
<td>Sample Communication Adapter - Customer Credit Information</td>
</tr>
<tr>
<td>Sample Component - J2EE - Order EJB</td>
</tr>
</tbody>
</table>

6. Click the Display Details icon for any listed asset (or double-click the row) to view the asset’s detail display.

7. Click the Download icon for any listed asset to download the asset.

### 8.3.4 View Asset Details

For selected assets, you can view asset details such as description, usage history, expected savings, and relationships. Within the asset metadata, links to the supporting documentation, user guides, test cases are provided to better enable you to reuse the existing functionality.

The Asset Details view provides asset details for any listed asset in an embedded Web-based browser view, which calls out the enterprise repository application for details associated with the selected asset.

1. Perform a keyword search to locate an asset in Oracle Enterprise Repository, as described in Searching for Assets.

2. In the Oracle Enterprise Repository Search Results window, click the Display Details icon. Oracle Enterprise Repository opens to display information about the selected asset, as shown in Figure 8–9.

**Figure 8–9 Oracle Enterprise Repository Overview Tab**
This section contains the following topics:

- Section 8.3.4.1, "Accessing the Repository Assets Pane"
- Section 8.3.4.2, "Accessing the Oracle Enterprise Repository Log"

8.3.4.1 Accessing the Repository Assets Pane

The Repository Assets view displays a list of assets that have been prescribed to your project, as well as assets that are already in use in the project. This section contains the following topics:

- Section 8.3.4.1.1, "About Oracle Enterprise Repository Projects"
- Section 8.3.4.1.2, "Accessing the Repository Assets View"

8.3.4.1.1 About Oracle Enterprise Repository Projects

Through the Enterprise Repository, analysts, architects, technical leads, and others that are involved in the design stages of a project, can create a list of assets that might fulfill a project’s requirements. The lists of assets are captured in compliance templates in the repository, and the compliance templates are associated with an Oracle Enterprise Repository project. For more information about compliance templates, see Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository.

From the Repository Assets view, you can view a list of assets appearing in all of the Compliance Templates assigned to your project. The viewer will indicate which of the assets have been used by you and/or other project members. The viewer will also display other assets that are already in use in the project.

8.3.4.1.2 Accessing the Repository Assets View

1. Open the View menu.

2. Click the Oracle Enterprise Repository Add-in for Visual Studio .NET option and then select Oracle Enterprise Repository Assets from the submenu. The Repository Assets window is displayed, as shown in Figure 8–10.

   ![Figure 8–10 Oracle Enterprise Repository Assets Window](image)

   **Figure 8–10 Oracle Enterprise Repository Assets Window**

3. Click the Display Details icon for any listed asset (or double-click the row) to view the asset’s detail display.

4. Click the Download icon for any listed asset to download the asset.

8.3.4.2 Accessing the Oracle Enterprise Repository Log

To access the Oracle Enterprise Repository log:

1. Open the View menu.
2. Click the Oracle Enterprise Repository Add-in for Visual Studio .NET option and then select Oracle Enterprise Repository Log from the submenu. The Oracle Enterprise Repository Log window is displayed.

3. Click Clear to remove the log entries.

8.3.5 Download Artifacts

You can download an asset’s artifacts (i.e., payload) into your project. Typically an asset payload is the functionality that you need to use a service (such as a WSDL file) or incorporate into your code base (usually a binary). Within the asset metadata, links to supporting documentation, user guides, test cases, etc., are provided to better enable developers to reuse existing functionality.

1. Perform a keyword search to locate an asset in Oracle Enterprise Repository, as described in Searching for Assets.

2. In the Oracle Enterprise Repository Search Results window, click the Download icon, as shown in Figure 8–11.

### Figure 8–11 OER Search Results - Click Download

<table>
<thead>
<tr>
<th>Asset Name</th>
<th>Asset Version</th>
<th>Asset Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Application - Credit Card Authentication System</td>
<td>1.2</td>
<td>Application</td>
</tr>
<tr>
<td>Sample Artifact DTD - Inventory Item</td>
<td>1.0</td>
<td>Artifact DTD</td>
</tr>
<tr>
<td>Sample Artifact WS-Policy - Customer Information Encryption Policy</td>
<td>1.0</td>
<td>Artifact WS-Policy</td>
</tr>
<tr>
<td>Sample Artifact WSDL - Account Detail</td>
<td>1.0</td>
<td>Artifact WSDL</td>
</tr>
<tr>
<td>Sample Artifact XML - Customer</td>
<td>1.0</td>
<td>Artifact XML</td>
</tr>
<tr>
<td>Sample Binding - SOAP/HTTP</td>
<td>1.1</td>
<td>Binding</td>
</tr>
<tr>
<td>Sample Binding - Data Validation Server</td>
<td>1.0</td>
<td>Binding</td>
</tr>
</tbody>
</table>

3. Select the VS project that you want to download the asset’s files into, as shown in Figure 8–12, and then click Next.

### Figure 8–12 Download Oracle Enterprise Repository Asset

4. Select the asset files to download, as shown in Figure 8–13, and then click Finish.
5. If necessary, launch the Solution Explorer. A new folder labeled Oracle Enterprise Repository References is displayed in the project’s file tree, as shown in Figure 8–14. This folder contains a subfolder bearing the name of the downloaded asset (for example, "xmd5 (1.0)" in the illustration below). This folder contains the asset’s artifacts.

8.3.6 Automatic Usage Detection

Oracle Enterprise Repository can automatically detect asset reuse within the development environment. This allows development teams to ensure that they get asset reuse credit, regardless of whether the assets have been downloaded through Oracle Enterprise Repository or pulled from another source, such as the developer’s desktop. Automated Usage Detection relies on a fingerprinting process, called Software File Identification (SFID), which tags selected files within an asset with a
Using VS .NET

Using the IDE to Interact with Oracle Enterprise Repository

In order to automatically detect usage, a .NET project must be monitored.

1. Open the .NET Solution Explorer.
2. Right-click the solution in the file tree and select the Oracle Enterprise Repository Add-in for Visual Studio .NET option from the context menu.
3. Click Projects Monitored from the submenu. The Monitored Projects window is displayed.
4. Select the .NET projects that you want monitored for automated usage detection, as shown in Figure 8–15.

**Figure 8–15 MonitoredProjects Dialog**

![MonitoredProjects Dialog](image)

5. Click OK when finished.
Part IV

Developing Custom Integrations

This part describes how to get started with the Extensibility Framework (REX) and use the various APIs that REX provides.

This part contains the following chapters:

- Chapter 9, "Repository Extensibility Framework"
- Chapter 10, "ArtifactStore API"
- Chapter 11, "AcceptableValueLists API"
- Chapter 12, "Asset API"
- Chapter 13, "AssetType API"
- Chapter 14, "Categorization Types and Categorizations API"
- Chapter 15, "CMF Entry Type API"
- Chapter 16, "Custom Access Settings API"
- Chapter 17, "Department API"
- Chapter 18, "Extraction API"
- Chapter 19, "Localization of REX Clients"
- Chapter 20, "Notification API"
- Chapter 21, "Policy API"
- Chapter 22, "Projects API"
- Chapter 23, "Relationship Types API"
- Chapter 24, "Role API"
- Chapter 25, "Subscriptions API"
- Chapter 26, "System Settings API"
- Chapter 27, "User API"
- Chapter 28, "Vendor API"
This chapter provides an overview of Repository Extensibility Framework (REX).

This chapter contains the following sections:

- **Section 9.1, "Introduction to REX"
- **Section 9.2, "REX Architecture"
- **Section 9.3, "Basic Concepts"

**Note:** As a result of Oracle’s acquisition of BEA/Flashline, Inc., the product Flashline Registry has been rebranded as Oracle Enterprise Repository. The bulk of the REX documentation has been revised to reflect this change. However, in order to avoid confusion, certain instances of the words “flashline” and “registry” are unchanged in this documentation, particularly where they appear in the java package structure and in the REX class names.

### 9.1 Introduction to REX

REX is a Web Services API for programmatic integration into Oracle Enterprise Repository. It is based on accepted industry standards, and designed with a focus on interoperability and platform independence. REX uses Remote Procedure Call (RPC) Web Services described by the Web Services Description Language (WSDL v1.1). This allows clients to interact with Oracle Enterprise Repository using any platform and any implementation language that supports Web Services. For example, while Oracle Enterprise Repository is a J2EE application, REX allows programmatic interaction with a .NET client.

If your Oracle Enterprise Repository is or will be configured to be secured by Siteminder, you will need to configure the policy server to ignore (or unprotect) the following URL to allow OpenAPI integration to function properly:

http://appserver.example.com/oer/services/

**Note:** Every example provided in the documentation is provided for illustrative purposes and will not necessarily compile due to package structure changes between versions of the Oracle Enterprise Repository WSDL. The user is expected to change the package structure to appropriately target their version of Oracle Enterprise Repository. Full sample code for your version of Oracle Enterprise Repository is provided as part of the install media.
For more information about REX, see the REX Javadoc at Oracle Fusion Middleware Extensibility Framework (REX) for Oracle Enterprise Repository.

9.2 REX Architecture

Figure 9–1 describes the REX architecture.

The high-level architecture of Oracle Enterprise Repository and REX is designed with several high-level goals in mind:

- **Flexibility**
  
  Any client platform that conforms to accepted industry standards, such as SOAP, WSDL, and HTTP, can interact with Oracle Enterprise Repository through the REX interface. Proper functioning of the API with the most common client platforms has been validated.

- **Extensibility**
  
  Oracle Enterprise Repository's layered architecture simplifies the process of adding subsystems to provide access to new features as they are added to Oracle Enterprise Repository. For more information, see Section 9.2.4, "Versioning Considerations for the Oracle Enterprise Repository REX".

- **Simplicity**
  
  End users will find it easy to take advantage of the extensive feature set available in REX.

This section contains the following topics:

- Section 9.2.1, "Subsystems Overview"
- Section 9.2.2, "CRUD-Q Naming Convention"
- Section 9.2.3, "Fundamental WSDL Data Types"
- Section 9.2.4, "Versioning Considerations for the Oracle Enterprise Repository REX"
9.2.1 Subsystems Overview

Oracle Enterprise Repository’s REX provides access to a variety of subsystems. These subsystems loosely group system functionality into logical categories roughly equivalent to the type of entity on which they operate. Much of this document is organized into sections related to these subsystems.

REX methods are named using a scheme based on the various subsystems. For more information about the description of the algorithm used in this process, see Section 9.2.2, "CRUD-Q Naming Convention". The subsystems defined in REX include:

- acceptableValue
- asset
- assetType
- authToken
- categorization
- categorizationType
- department
- extraction
- import/export
- project
- relationship
- role
- user
- vendor

9.2.2 CRUD-Q Naming Convention

The scheme used in naming the Open API methods is based on the CRUD-Q mnemonic. CRUD-Q represents five operations:

- C - Create
- R - Read
- U - Update
- D - Delete
- Q - Query

Each method starts with the name of the subsystem to which it belongs, followed by a description of the operation to be performed within that subsystem, as in the following example:

<subsystem><Operation>

For example, the method to perform a create operation in the asset subsystem would be:

assetCreate(...)

This naming convention would also produce:

assetRead(...)
assetUpdate(...)

Subsystems are likely to have operations beyond the CRUD-Q set, and may not include all of CRUD-Q. For example, since it is impossible to delete a user, there is no userDelete method. There is, however, a userDeactivate method. Table 9–1 provides a detailed list of the detailed operations that the subsystem can have apart from the CRUD-Q operations.

### Table 9–1 Subsystems and CRUD-Q Convention Relationship

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Create</th>
<th>Read</th>
<th>Update</th>
<th>Delete</th>
<th>Query</th>
<th>Other Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptable Value List</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Accept, Activate, Assign, Deactivate, Register, Retire, Submit, Unaccept, Unassign, Unregister, Unsubmit, Modify Custom Access Settings</td>
</tr>
<tr>
<td>Asset</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Asset Type</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Categorization Type</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Extraction</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Close, Open, Reassign extractions, Remove user</td>
</tr>
<tr>
<td>Project</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Activate, Deactivate, Lockout, Unapprove</td>
</tr>
<tr>
<td>Relationship</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Role</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>User</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Activate, Deactivate, Lockout, Unapprove</td>
</tr>
<tr>
<td>Vendor</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Contact</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

### 9.2.2.1 Atomicity of Method Calls

Unless otherwise noted, every call to REX is atomic. That is, each call either succeeds completely, or fails completely.

For example, one version of the categorizationUpdate method takes as an argument an array of categorization updates. In this case, if one categorization update fails, all categorization updates fail.

### 9.2.2.2 No Inter-call Transaction Support

REX does not currently support inter-call transactions. For example, in the event of an error it is impossible to roll back operations associated with a series of REX calls.

### 9.2.3 Fundamental WSDL Data Types

REX uses the following fundamental WSDL data types, in addition to the complex types defined in the WSDL.

Arrays of any of these types may be returned:

- xsd:int
- xsd:long
- xsd:string
- xsd:boolean
- xsd:dateTime

You can dynamically generate API Stubs by consuming the REX WSDL by pointing their IDEs or Web services toolkits at the following URL:

http://appserver/oer/services/FlashlineRegistry?WSDL

For example, Java stubs for the Oracle Enterprise Repository REX WSDL may be created using the AXIS WSDL2java utility:

```
java -cp .;axis.jar; xerces.jar; commons-discovery.jar; commons-logging.jar; jaxen-full.jar; jaxrpc.jar; saaj.jar; wsdl4j.jar; xalan.jar org.apache.axis.wsdl.WSDL2Java
```

http://appserver/oer/services/?FlashlineRegistry?WSDL

The JAR files required to complete this conversion process are:

- axis.jar
- xerces.jar
- commons-discovery.jar
- commons-logging.jar
- jaxen-full.jar
- jaxrpc.jar
- saaj.jar
- wsdl4j.jar
- xalan.jar

---

**Note:** Replace "appserver" in the URL with the name of the server on which Oracle Enterprise Repository is installed.

---

### 9.2.4 Versioning Considerations for the Oracle Enterprise Repository REX

Naturally, the evolution of the Oracle Enterprise Repository REX will parallel the evolution of Oracle Enterprise Repository. However, as a result of this process, incompatibilities may emerge between older and newer versions of REX. While full version compatibility is our goal, backwards-compatibility is subject to unpredictable and therefore potentially unavoidable limitations. In future, Oracle Enterprise Repository releases REX will include the following backwards-compatible enhancements:

- Addition of new methods to the Oracle Enterprise Repository Web service
- Definition of new complex types in the WSDL

With regard to these backwards-compatible changes, the regeneration of client proxies will be necessary only when the need arises to take advantage of new features and functionality.

The namespace of the service will change only when incompatible changes are unavoidable. Examples of such a change would include the modification of an existing
complex type, or a change in the signature of a method in the service. In this event, client proxy regeneration will be necessary, as will minimal code changes. Client proxies generated from prior versions of REX will be unable to connect to the new service.

The namespace of complex types will never change.

9.3 Basic Concepts

This section describes the basic concepts of REX such as getting started with enabling the OpenAPI and consuming the WSDL. This section contains the following topics:

- Section 9.3.1, "Getting Started - Enabling the OpenAPI within the Oracle Enterprise Repository"
- Section 9.3.2, "Getting Started - Consuming the WSDL"

9.3.1 Getting Started - Enabling the OpenAPI within the Oracle Enterprise Repository

The procedure is performed on the Oracle Enterprise Repository Admin screen.

1. Click System Settings.
2. Enter the property cmee.extframework.enabled in the Enable New System Setting text box.
3. Click Enable. The Open API section is displayed.
4. Ensure the cmee.extframework.enabled property is set to True.
5. Click Save. REX is now enabled within your instance of Oracle Enterprise Repository.

9.3.2 Getting Started - Consuming the WSDL

The first step in using REX is to generate the client-side stubs necessary to communicate with the Oracle Enterprise Repository server. This is generally accomplished using the automated tools provided by the specific Web services toolkit in use. This section describes how to generate client stubs using a variety of integrated development environments and toolkits.

This section contains the following topics:

- "Visual Studio .NET"
- "Eclipse - Lomboz plugin"
- "Authentication and Authorization"
- "Exception Handling"
- "Java and AXIS"
- ".NET"
- "Validation"
- "Query Considerations in REX"
- "Sending Binary Data (Attachments)"
- "Using DIME attachments with .NET and the Microsoft Web Services Enhancement (WSE) Kit"
- "Using SOAP with Attachments and Java AXIS clients"
Visual Studio .NET

1. Right-click the **Web References** node in the Solution Explorer tree and then select **Add Web Reference**, as shown in Figure 9–2. The Add Web Reference dialog is displayed.

![Figure 9–2 Solution Explorer Window](image)

2. Specify the name of the Web reference, as shown in Figure 9–3.

![Figure 9–3 Add Web Reference Dialog](image)

You may load the Oracle Enterprise Repository WSDL file directly from the application server (if it is running) by specifying the proper URL, or from a static file local to your Eclipse project. If you wish to use a URL, it can be found in the following location (replace "yourserver" and "appname" with the appropriate values):

http://yourserver:port/appname/services/FlashlineRegistry?wsdl

3. Connect to the service endpoint. Once the Web reference has been created, your application can use it by establishing an instance of the client service proxy:

```csharp
flashline.FlashlineRegistryService registry = new flashline.FlashlineRegistryService();
```
4. If the default URL of the service (as contained in the WSDL file used to establish the Web reference) is not the actual address of the Web service, the endpoint address can be changed as follows:

    registry.Url = "http://appserver/oer/services/FlashlineRegistry";

Your application is ready to interact with Oracle Enterprise Repository via REX.

**Eclipse - Lomboz plugin**

The Lomboz plugin will work with Eclipse but any type of Eclipse plugin that provides support for Web Services should work. Most of these tools/plugins will usually ask for:

- The location of the WSDL file
- The source directory from your project in which generated code should live
- The WSDL version with which the WSDL file complies.

The Oracle Enterprise Repository WSDL file can be loaded directly from the application server (if it is running) by specifying the proper URL, or from a static file local to your Eclipse project. The WSDL URL can be found in the following location (replace “www.example.com” and ”AppName” with the appropriate values):

    http://www.example.com/AppName/services/FlashlineRegistry?wsdl

Choose a source directory on your project’s build path as the target of the generated client proxy classes.

Oracle Enterprise Repository WSDL conforms to version 1.1 of the WSDL standard.

**Authentication and Authorization**

The first step in using REX is authenticating with the server. Authentication is performed using the authTokenCreate method. This method takes a user ID and password as arguments to be used in authenticating with Oracle Enterprise Repository. If the ID and password are successfully authenticated, an authentication token is returned. This token must be used in every subsequent call to REX.

If a valid AuthToken is not included for every REX method, an OpenAPIException will be thrown. The applies to all methods except authTokenCreate and authTokenDelete.

The following example shows how to retrieve an AuthToken and use it in subsequent REX calls.

```java
package com.example.flashlineclient;
// The imports below are assumed for any of the included examples
import javax.xml.rpc.ServiceException;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Asset;
public class FlexTest {
    public FlexTest () {
    }
    public static void main(String[] pArgs) throws OpenAPIException, RemoteException, ServiceException {
        // Code to retrieve and use AuthToken
    }
```

try {
    FlashlineRegistry lRegistry = null;
    AuthToken lAuthToken = null;
    URL lURL = null;
    lURL = new URL("http://www.example.com/appname/services/FlashlineRegistry");
    // 'www.example.com' should be your server address
    // 'appname' is the application name of the location that the Registry is running on
    // These two things must be changed to the proper values in every example
    lRegistry = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
    lAuthToken = lRegistry.authTokenCreate("username", "password");
    System.out.println(lAuthToken.getToken());
    // displaying the authtoken as a string to the screen
    Asset lAsset = lRegistry.assetRead(lAuthToken, 559);
    // reading asset number 559
    System.out.println(lAsset.getName());
    // displaying the name of asset 559 to the screen
} catch(OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message = " + lEx.getMessage());
    System.out.println("StackTrace: 
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
System.out.println("execution completed");
System.exit(0);
}

Authorization

REX enforces the same authorization rules as the Oracle Enterprise Repository application. The user ID and password used to authenticate will determine the privileges available to the user via REX. For example, if the authenticated user does not have EDIT privileges assigned for projects, and attempts to create a project using the projectCreate REX method, an OpenAPIException will be thrown.

Exception Handling

Open API communicates server errors to the client via a SOAP Fault. The manner in which SOAP Faults are handled varies according to the language and SOAP toolkit in use.

This section suggests ways to detect and deal with exceptions generated by the Open API within client code, using the most common platform/toolkit combinations.

Java and AXIS

Exceptions thrown by the Open API are transferred as SOAP Faults, and then de-serialized by the AXIS client toolkit as Java Exceptions. That is, AXIS makes an attempt to map the SOAP Fault to a corresponding client-side OpenAPIException class. Server-side errors are represented to the client as com.flashline.registry.openapi.OpenAPIException instances.

Consequently, client code can catch exceptions with the code listed below which is from the code above:

try {
Basic Concepts

```
1 Asset = 1 Registry.assetCreate(...);
)

catch (OpenAPIException lEx)
{
    System.out.println('ServerCode = ' + lEx.getServerErrorCode());
    System.out.println('Message = ' + lEx.getMessage());
    System.out.println('StackTrace: ');
    lEx.printStackTrace();
}

catch (RemoteException lEx)
{
    lEx.printStackTrace();
}

catch (ServiceException lEx)
{
    lEx.printStackTrace();
}

catch (MalformedURLException lEx)
{
    lEx.printStackTrace();
}

.NET

Using a consumed Web service in .NET is a bit more complicated. All service exceptions are caught on the client side as exceptions of type System.Web.Services.Protocols.SoapException. This makes it somewhat tricky to retrieve the extended information available in the OpenAPIException thrown by the Open API.

The .NET SoapException property represents the SOAP Fault message. However, the additional fields provided by the OpenAPIException, beyond what is explicitly mapped to the standard SOAP Fault, must be obtained by manually parsing the XML Detail property of the .NET SoapException. For example, code similar to the following could be used to view the server-side error code and stack trace returned with an OpenAPIException:

```
try
{
    registry.testException();
}

catch (SoapException exc)
{
    XmlNode lNode = null;
    if (lNode != null)
        Console.Out.WriteLine("Error Code: "+lNode.InnerText);
    lNode = exc.Detail.SelectSingleNode("*/serverStackTrace");
    if (lNode != null)
        Console.Out.WriteLine("Server Stack Trace:
        "+lNode.InnerText);
}
```

It is a good idea to use a more explicit XPath expression than */serverErrorCode in order to eliminate the chance that the returned SOAP Fault includes more than one XML Element with the name serverErrorCode.

The following SOAP response illustrates an OpenAPIException represented as a SOAP Fault message:

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope
    xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
    <soapenv:Body>
        <soapenv:Fault>
            <faultcode>soapenv:Server.userException</faultcode>
            <faultstring>Error [100], Severity [SEVERE]:An unknown server-side error occured.
        </soapenv:Fault>
    </soapenv:Body>
</soapenv:Envelope>
```
Validation
When attempting to save an entity in Oracle Enterprise Repository, the system will attempt to validate the input. Any missing or invalid data will cause the server to throw an OpenAPIException containing a list of fields and their respective errors. See documentation above regarding exception handling.

For more information, see "Exception Handling".

Query Considerations in REX
The criteria object model is currently moving to a more flexible representation of terms and grouping. As they occur, these changes will affect the availability of certain API features when executing a query using a criteria object. The subsystems only directly evaluate their corresponding criteria objects, and do not make use of the extended capabilities of the underlying SearchTermGroup, unless otherwise noted in this documentation.

Sending Binary Data (Attachments)
Various REX methods require sending or receiving potentially large sets of binary data between the client and server. For example, the import/export subsystem provides methods for sending a payload from which to import, and methods for retrieving a payload representing a set of exported assets.

Typically, binary data is transferred via Web services RPC invocations through Dynamic Internet Message Exchange (DIME); SOAP with Attachments (SwA); or Base-64 Encoding. Each has its advantages and disadvantages, but few client toolkits directly support all three.

The Oracle Enterprise Repository OpenAPI supports all three mechanisms for transferring binary data. Details are provided in the following sections. Any method that provides for the binary transfer of data will have three versions, each one supporting a different transfer mechanism. For example, to retrieve the results of an export, a user can select any one of the following methods:

- importGetResultsB64
Retrieve results of export in base-64 encoded format. This is the lowest common denominator, and can be used on any platform, provided that the client can encode/decode base-64 data.

- **importGetResultsDIME**
  Retrieve export results as an attached file, using the DIME protocol. This is the preferred option for most .NET clients.

- **importGetResultsSwA**
  Retrieve export results as an attached file, using the SOAP with Attachments (SwA) protocol (MIME-based)

### Using DIME attachments with .NET and the Microsoft Web Services Enhancement (WSE) Kit

Microsoft provides an extension to the standard .Net Web service toolkit. The Microsoft Web Services Enhancement (WSE) kit provides advanced functionality, such as sending and receiving attachments via Web services using the Dynamic Internet Messaging Exchange (DIME) protocol.

The following code snippet gives an example of sending data via a DIME attachment:

```csharp
// relax the requirement for the server to understand ALL headers. This MUST be
// done, or the call with the attachment will fail. After the call, if you wish,
// you can set this back to 'true'
registry.RequestSoapContext.Path.EncodedMustUnderstand= "false";
// clear the attachments queue
registry.RequestSoapContext.Attachments.Add(

// start an import running on the server
registry.importExecute(lAuthToken, "flashline", null, "FEA Flashpack Import",
null);
// do some polling (calls to importStatus) to monitor the import progress,
// if you wish
```

The following code snippet gives an example of receiving data via a DIME attachment:

```csharp
// relax the requirement for the server to understand ALL headers. This MUST be
// done, or the call with the attachment will fail. After the call, if you wish,
// you can set this back to 'true'
registry.RequestSoapContext.Path.EncodedMustUnderstand= "false";
// clear the attachments queue
// start an export
flashline.ImpExpJob lJob =
    registry.exportExecute(lAuthToken, "flashline", null, "Complete Export",
    "flashline",
    "<entitytypes>
    <entitytype type="acceptableValueList">
    <entities>
    <entity id="100"/>
    </entities>
    </entitytype>
    </entitytypes>");
// do some polling (calls to exportStatus) to watch the progress of the
// export, if you wish...
// this call will block until either the method returns (or an exception is
```
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// or the call times out.
registry.exportGetResultsDIME(lAuthToken, lJob);
// check to see if the call resulted in attachments being returned...
if(registry.ResponseSoapContext.Attachments.Count > 0)
{
    Stream lStream = registry.ResponseSoapContext.Attachments[0].Stream;
    // write the data out somewhere...
}

Using SOAP with Attachments and Java AXIS clients

The Axis client provides functions to handle SOAP attachments in Java. For more information, see http://www-106.ibm.com/developerworks/webservices/library/ws-soapatt/.

The following code snippet gives an example of receiving data:

```java
byte[] lResults = null;
ImpExpJob lExportJob = mFlashlineRegistrySrc.exportExecute(mAuthTokenSrc, "flashline", null, "Export Assets", "default", createAssetQuery().toString());
lExportJob = mFlashlineRegistrySrc.exportStatus(mAuthTokenSrc, lExportJob);
lResults = mFlashlineRegistrySrc.exportGetResultsB64(mAuthTokenSrc, lExportJob);
// write the results out to disk in a temp file
File lFile = null;
String lTempDirectory = System.getProperty("java.io.tmpdir");
lFile = new File(lTempDirectory + File.separator + "impexp.zip");
FileOutputStream lOS = new FileOutputStream(lFile);
BufferedOutputStream lBOS = new BufferedOutputStream(lOS);
lBOS.write(lResults);
lBOS.flush();
lBOS.close();
lOS.close();
```

The following code snippet gives an example of sending data via a DIME attachment:

```java
// open file and attach as data source
InputStream lIS = new FileInputStream(lFile);
((Stub)mFlashlineRegistryDest)._setProperty
(Call.ATTACHMENT_ENCAPSULATION_FORMAT, Call.ATTACHMENT_ENCAPSULATION_FORMAT_DIME);
ByteArrayDataSource lDataSource = new ByteArrayDataSource(lIS, "application/x-zip-compressed");
DataHandler lDH = new DataHandler(lDataSource);
// add the attachment
((Stub)mFlashlineRegistryDest).addAttachment(lDH);
ImpExpJob lJob = mFlashlineRegistryDest.importExecute(mAuthTokenDest, "flashline", null, "Import Assets Test", null);
```
This chapter provides an overview of ArtifactStore API and describes the use cases using this API.

This chapter contains the following sections:

- **Section 10.1, "Overview"**
- **Section 10.2, "Use Cases"**

## 10.1 Overview

The ArtifactStore Subsystem provides a Web Services-based mechanism that can be used to query and create Oracle Enterprise Repository ArtifactStores.

## 10.2 Use Cases

This section describes the use cases using the Artifact Store API. It contains the following topics:

- **Section 10.2.1, "Use Case: Query for ArtifactStore"**
- **Section 10.2.2, "Use Case: Create missing ArtifactStore"**

### 10.2.1 Use Case: Query for ArtifactStore

**Description**

Sample code is as follows:

```java
package com.flashline.sample.artifactstoreapi;
import java.net.URL;
import java.rmi.RemoteException;
```

### 10.2.2 Use Case: Create missing ArtifactStore

**Description**

This use case describes creating a missing artifactstore.

**Sample code is as follows:**

```java
package com.flashline.sample.artifactstoreapi;
import java.net.URL;
import java.rmi.RemoteException;
```
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.ArtifactStoreBean;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.ArtifactStoreCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ArtifactStores {
    public static void main(String pArgs[]) throws OpenAPIException,
RemoteException, ServiceException {
        try {
            //----------------------------------------------------------
            // Connect to Oracle Enterprise Repository
            //----------------------------------------------------------
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new
FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // -----------------------------------------
            // query for an artifact store
            ArtifactStoreCriteria lArtifactStoreCriteria = null;
            ArtifactStoreBean[] lArtifactStoreBeans = null;
            ArtifactStoreBean lArtifactStoreBean = null;
            lArtifactStoreCriteria = new ArtifactStoreCriteria();
            lArtifactStoreCriteria.setHostCriteria("existing-artifact-store.com");
            lArtifactStoreCriteria.setBasepathCriteria("/");
            lArtifactStoreBeans = repository.artifactStoreQuery(authToken,
lArtifactStoreCriteria, false);
            // create a missing artifact store if missing and based on the criteria
            lArtifactStoreCriteria = new ArtifactStoreCriteria();
            lArtifactStoreCriteria.setHostCriteria("missing-artifact-store.com");
            lArtifactStoreCriteria.setBasepathCriteria("/");
            // a new artifact store will be created
            lArtifactStoreBeans = repository.artifactStoreQuery(authToken,
lArtifactStoreCriteria, true);
            lArtifactStoreBean = lArtifactStoreBeans[0];
        } catch (Exception e) {
            throw new RuntimeException(e.getMessage());
        }
    }
}

Use Cases
This chapter provides an overview of AcceptableValueLists API and describes the use cases using this API.

This chapter contains the following sections:

- Section 11.1, "Overview"
- Section 11.2, "Use Cases"

### 11.1 Overview

Acceptable Value Lists are used in single- and multiple-selection drop-down box metadata elements.

When creating or editing an asset type, Acceptable Value Lists are used as metadata elements. These metadata elements are referenced by ID in the editor and viewer XML for the asset type/compliance template.

When creating or editing assets, values contained in Acceptable Value Lists are used as options for the metadata elements defined for the particular asset type/compliance template. To use the acceptable values for an Acceptable Value List, the custom data for the asset (Asset.GetCustomData()) is modified to reference the ID of the acceptable value.

### 11.2 Use Cases

This section describes the use cases using the Acceptable ValueLists API. It contains the following topics:

- Section 11.2.1, "Use Case: Create and Edit an Acceptable Value List"
- Section 11.2.2, "Use Case: Find an Acceptable Value List and use it in an asset"

### 11.2.1 Use Case: Create and Edit an Acceptable Value List

**Description**

Create a new acceptable value list and enter it into Oracle Enterprise Repository.

**Sample code is as follows:**

```java
package com.flashline.sample.acceptablevaluelists;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
```
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.AcceptableValue;
import com.flashline.registry.openapi.entity.AcceptableValueList;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class CreateAndEditAcceptableValueList {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // Build an array of acceptable values for the list.
            String newAcceptableValueListName = "My AcceptableValueList " + Calendar.getInstance().getTimeInMillis();
            AcceptableValue[] acceptableValues = new AcceptableValue[3];
            acceptableValues[0] = new AcceptableValue();
            acceptableValues[0].setValue("My Value");
            acceptableValues[1] = new AcceptableValue();
            acceptableValues[1].setValue("My Next Value");
            acceptableValues[2] = new AcceptableValue();
            acceptableValues[2].setValue("My Last Value");
            // Create the AcceptableValueList in Repository
            AcceptableValueList newAcceptableValueList = repository.acceptableValueListCreate(authToken, newAcceptableValueListName, acceptableValues);
            System.out.println("The new acceptableValueList id =" + newAcceptableValueList.getID() + "\n + newAcceptableValueList.getID() + \\
            )
            catch (OpenAPIException lEx) {
                System.out.println("ServerCode = " + lEx.getServerErrorCode());
                System.out.println("Message = " + lEx.getMessage());
                System.out.println("StackTrace: ");
                lEx.printStackTrace();
            } catch (RemoteException lEx) {
                lEx.printStackTrace();
            } catch (ServiceException lEx) {
                lEx.printStackTrace();
            } catch (MalformedURLException lEx) {
                lEx.printStackTrace();
            }
        }
    }
}
11.2.2 Use Case: Find an Acceptable Value List and use it in an asset

Description
Populate an asset’s single or multiple selection lists with acceptable values.

Sample code is as follows:
```java
package com.flashline.sample.acceptablevaluelists;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AcceptableValue;
import com.flashline.registry.openapi.entity.AcceptableValueList;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AcceptableValueListCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
import com.flashline.registry.openapi.service.v100.FlashlineRegistryServiceLocator;
public class FindAcceptableValueListAndUseInAsset {
    public static void main(String[] args) throws OpenAPIException,
    RemoteException,
    ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            try {
                URL url = null;
                url = new URL(args[0]);
                FlashlineRegistry repository = 
                    new FlashlineRegistryServiceLocator().
                        getFlashlineRegistry(url);
                // Authenticate with OER
                AuthToken authToken = 
                    repository.authTokenCreate(args[1],
                        args[2]);
                // Find the AcceptableValueList
                AcceptableValueListCriteria criteria = 
                    new AcceptableValueListCriteria();
                criteria.setNameCriteria("My AcceptableValueList");
                AcceptableValueList[] acceptableValueLists = 
                    repository.acceptableValueListQuery(authToken,
                        criteria);
                AcceptableValueList myAcceptableValueList = 
                    acceptableValueLists[0];
                AcceptableValue[] acceptableValues = 
                    myAcceptableValueList.getAcceptableValues();
                // Find one value within the AcceptableValueList
                for (int i = 0; i < acceptableValues.length; i++) {
                    if (acceptableValues[i].getValue().equals("My Value")) {
                        myAcceptableValue = acceptableValues[i];
                        break;
                    }
                }
            }
        }
    }
}
```
long myAcceptableValueID = myAcceptableValue.getID();
Asset myAsset = repository.assetRead(authToken, 561);
String customData = myAsset.getCustomData();
// ///////////////////////////////////////////////////////////////
// Modify customData to use myAcceptableValueID.
// ///////////////////////////////////////////////////////////////
String modifiedCustomData = customData;
// ... 
// ///////////////////////////////////////////////////////////////
// save modified custom data
// ///////////////////////////////////////////////////////////////
myAsset.setCustomData(modifiedCustomData);
repository.assetUpdate(authToken, myAsset);
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
This chapter provides an overview of Asset API and describes the use cases using this API.

This chapter contains the following sections:

- Section 12.1, "Overview"
- Section 12.2, "Use Cases"

12.1 Overview

Assets are the core entities in the Oracle Enterprise Repository. This document covers the Asset Subsystem actions Create, Read, Update, Delete, and Query. It also covers the modification of:

- Asset active status:
  - Activate
  - Deactivate
  - Retire

- Asset registration status:
  - Submit
  - Accept
  - Register
  - Unsubmit
  - Unaccept
  - Unregister

- Asset assignment status:
  - Assign
  - Unassign

Several issues must be taken into consideration when working with assets in Oracle Enterprise Repository using REX. Trade-offs in memory consumption, and performance should be carefully weighed.

- Memory Consumption

  Assets and their metadata consume a significant amount of memory on both the REX server and on the client software using REX. When searching Oracle
Enterprise Repository using REX, it is possible that a large number of assets may be returned. To avoid Denial of Service interruptions to the system, administrators can limit the maximum number of results that can be returned in a call to the REX method `assetQuery`. The system setting `cmee.extframework.assets.max` controls the maximum number of search results that can be returned as a result of a query. If the number of results matching a query exceeds the maximum, an exception will be generated by REX.

In cases where it is expected that a potentially large number of assets will match a query, the `assetQuerySummary` method is recommended. This alternative method of querying Oracle Enterprise Repository will match exactly the same assets as a call to `assetQuery`, but will return lightweight asset summary objects, rather than the full asset objects. These summary objects consume a nominal amount of memory, and the possibility of exhausting resources as a result of a query is consequently negligible.

Once a summary query has been performed, the full asset objects can be retrieved for assets of interest using either `assetRead`, or `assetReadArrayFromSummary`. If multiple assets are desired, use of the `assetReadArrayFromSummary` method is recommended. See the API documentation for details on using this method.

### Performance

REX is based on standard Web Services technology, which provides many significant advantages in flexibility and portability. However, as with any Web Services-based technology, performance can be challenging, particularly in high data volume situations (e.g., large numbers of assets being manipulated). REX provides options that allow developers to avoid potential performance problems.

- **Iterative Reads**

  The primary overhead in web services technology is incurred in the serialization and de-serialization of data using XML, combined with network transfer. Much of this overhead can be avoided in situations where a number of assets are to be read. For example, if 50 assets are to be retrieved from Oracle Enterprise Repository using REX, the developer could perform 50 `assetRead` calls. A better approach, however, would be to use the `assetReadArray` method, passing the IDs of the desired assets as a single argument. This would retrieve all 50 assets in one call, dramatically improving performance.

- **Listing Operations**

  Often data is retrieved from REX for the purpose of displaying a listing to an end user, who then is expected to select an asset for closer inspection. In cases like these, the full extent of asset metadata is not required to generate a summary list. As discussed in the section on memory above, consider using the summary methods provided in REX.

### Access Control

- Which assets a user of REX can see, and to some extent the information in those assets, is controlled by access settings. The same access restrictions that exist for a user accessing the system via the web gui also apply to the REX asset subsystem.

- **Query Restrictions** - users can only retrieve assets in a call to `assetQuery` or `assetRead` for which they have view permission.

- **Update Restrictions** - users can only update assets for which they have edit permission.
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– File restrictions - users can only view the files for which they have download permissions as set in the File type Custom Access Settings applied to each individual file. This means that a user might be able to view an asset, but might not be able to view any of the asset's files. Each file can have its own permissions, different than the asset's permissions. If specific File type permissions are not applied to a file, these permissions will be inherited from the asset's permissions to which the files belong.

12.1.1 Definitions

This section contains the following definitions:

■ ID and UUID

– ID is an internal unique identifier (numeric) used to identify an asset uniquely within a single Oracle Enterprise Repository instance.

– UUID is a universally unique identifier (128-bit numeric represented as a hexadecimal string) used to identify an asset uniquely across any instance of Oracle Enterprise Repository. Each asset’s UUID is exposed primarily for purposes of reading and searching. Oracle strongly advises not modifying this field using REX. However, if an administrator does choose to modify an asset’s UUID, then the format must be consistent (00000000-0000-0000-0000-000000000000) and the UUID must be unique within the target Oracle Enterprise Repository instance; otherwise, the change operation will fail.

■ Name and Version

String fields that combine to uniquely identify an asset.

■ Custom Data

Customizable metadata for an asset is stored in an XML structure within this string. The sample code describes the custom data methods effectively.

12.1.2 Sample Code

```java
package com.flashline.sample.assetapi;
import java.io.StringReader;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.text.Format;
import java.text.SimpleDateFormat;
import java.util.Date;
import java.util.List;
import javax.xml.rpc.ServiceException;
import org.jdom.Document;
import org.jdom.Element;
import org.jdom.input.SAXBuilder;
import org.jdom.output.XMLOutputter;
import org.jdom.xpath.XPath;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateCustomData {
    public static void main(String pArgs[]) throws OpenAPIException,
    RemoteException, ServiceException {
```
try {
  // Connect to Oracle Enterprise Repository
  URL lURL = null;
  lURL = new URL(pArgs[0]);
  FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
    .getFlashlineRegistry(lURL);

  // Login to OER
  AuthToken authToken = repository.authTokenCreate(
    pArgs[1], pArgs[2]);

  // assetUpdateCustomDataString
  // Find and Modify a custom data field value with a value supplied on the
  // command line
  Long currentLicenses = new Long(repository.assetReadCustomDataString(authToken, 589, "-_total-licenses-owned"));
  currentLicenses = new Long(currentLicenses.intValue() + 1);
  repository.assetUpdateCustomDataString(authToken, 589, "-_total-licenses-owned", currentLicenses.toString());

  // assetUpdateCustomDataStringArray
  // Add a custom data field value with a value supplied on the command line
  String dateFormat = new SimpleDateFormat("yyyyMMdd").format(new Date());
  String[] versionHistoryValues = {currentLicenses.toString(), dateFormat, "Updated version History: " + dateFormat};
  repository.assetUpdateCustomDataStringArray(authToken, 589, versionHistory, versionHistoryValues);

  // assetUpdateCustomDataNode
  // The following updates a specific custom data element called
  "document-name" that is a child of "document",
  // which is a child of "documentation"
  XPath lXPath = null;
  List lElms = null;
  String lXMLDocumentation = repository.assetReadCustomDataNode(authToken, 589, "documentation");
  SAXBuilder lBuilder = new SAXBuilder();
  Document lDoc = null;
  lReader = new StringReader(lXMLDocumentation);
  lBuilder.setValidation(false);
}
lBuilder.setIgnoringElementContentWhitespace(true);
lDoc = lBuilder.build(lReader);
1XPath = XPath.newInstance("documentation/document");
1Elms = 1XPath.selectNodes(lDoc);
//Cycle through the "document" elements until we find the one we want. Then update it.
for (int i=0;i<lElms.size();i++) {
    Element lElm = (Element)lElms.get(i);
    List lChildElms = lElm.getChildElements();
    for (int x=0;x<lChildElms.size();x++) {
        Element lChildElm = (Element)lChildElms.get(x);
        if (lChildElm.getName().equals("document-name") && lChildElm.getValue().equals("API")) {
            lChildElm.setText("API KHAN");
        } else {
            lChildElm.setText(lChildElm.getValue());
        }
    }
}

//Convert the Document back to an XML string and update the asset's custom data.
repository.assetUpdateCustomDataNode(authToken, 589, "documentation", new XMLOutputter().outputString(lDoc));

try {
    //The following updates multiple custom data elements. One is called
    'document-name' that is a child of "document",
    //which is a child of "documentation"
    //The other is the element called "also-known-as"
    1XPath = null;
    1Elms = null;
    //First read the Node "documentation" of the specific asset
    lXMLDocumentation = repository.assetReadCustomDataNode(authToken, 589, 'documentation');
    //Using DOM, convert the XML to a Document
    lDoc = null;
    lBuilder = new SAXBuilder();
    lReader = null;
    lReader = new StringReader(lXMLDocumentation);
    lBuilder.setValidation(false);
    lBuilder.setIgnoringElementContentWhitespace(true);
    lDoc = lBuilder.build(lReader);
    1XPath = XPath.newInstance("documentation/document");
    1Elms = 1XPath.selectNodes(lDoc);
    //Cycle through the "document" elements until we find the one we want. Then update it.
    for (int i=0;i<lElms.size();i++) {
        Element lElm = (Element)lElms.get(i);
        List lChildElms = lElm.getChildElements();
        for (int x=0;x<lChildElms.size();x++) {
            Element lChildElm = (Element)lChildElms.get(x);
            if (lChildElm.getName().equals("document-name") && lChildElm.getValue().equals("API")) {
                lChildElm.setText("API KHAN");
            } else {
                lChildElm.setText(lChildElm.getValue());
            }
        }
    }
}
12.1.3 Related Subsystems

This section describes the following related subsystems that are used with the Asset API:

- **AssetType**
  
  All assets need an active and valid asset type. This asset type defines the metadata that can be stored in the custom data for the asset.

- **Vendor**
  
  If desired, an asset may be linked to a vendor. This linking is done by the vendor ID.
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- **AcceptableValueLists**
  When creating or editing assets, acceptable values contained in acceptable value lists are used to as options for the metadata elements that were defined for the asset type. To use the acceptable values for an acceptable value list, modify the custom data for the asset (Asset.GetCustomData()) to have it reference the id of the acceptable value.

- **RelationshipType**
  Relationship types define the kinds of relationships that can exist between assets.

- **Categorization Types**
  Categorization types are top-level groups of categorizations added to asset types. Categorizations describe an asset.

- **Projects**
  Assets can be produced by projects. The producing projects for an asset are stored in an array of ID's.

- **Users**
  Users can be assigned to assets. They are the person who is responsible for working up the metadata.

### 12.2 Use Cases

This section describes the use cases using the Asset API. It contains the following topics:

- Section 12.2.1, "Use Case: Creating a new asset"
- Section 12.2.2, "Use Case: Creating a new asset from XML"
- Section 12.2.3, "Use Case: Modifying an asset"
- Section 12.2.4, "Use Case: Assign users to an asset"
- Section 12.2.5, "Use Case: Building an asset search"
- Section 12.2.6, "Use Case: Upgrading asset status"
- Section 12.2.7, "Use Case: Downgrading asset status"
- Section 12.2.8, "Use Case: Apply and remove Compliance Templates from a project"
- Section 12.2.9, "Use Case: Creating the new version of an asset and retiring the old version"
- Section 12.2.10, "Use Case: "Housekeeping""
- Section 12.2.11, "Use Case: Finding assets and updating custom-data"
- Section 12.2.12, "Use Case: Reading an Asset's Tabs"
- Section 12.2.13, "Use Case: Retrieve An Asset's Tab Based on TabType"
- Section 12.2.14, "Use Case: Approving and Unapproving a tab"
12.2.1 Use Case: Creating a new asset

**Description**
Create a new asset and enter it into Oracle Enterprise Repository.

**Sample code is as follows:**
```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CreateNewAsset {
    public static void main(String pArgs[]) throws OpenAPIException,
RemoteException,
ServiceException {
    try {
        // Connect to Oracle Enterprise Repository
        URL lURL = null;
        lURL = new URL(pArgs[0]);
        FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
.getFlashlineRegistry(lURL);
        // Login to OER
        AuthToken authToken = repository.authTokenCreate(
pArgs[1],pArgs[2]);
        // Create new asset
        Asset myAsset = repository.assetCreate(authToken,
            "My Asset Name108", "My Version
"+Calendar.getInstance().getTimeInMillis(), 144);
        //The following demonstrates how to modify a custom data Date element on an
        //asset.
        //This date must be in a specific format and the name of the element must by
        //known.
        //In this example, the name of the element is "testdate". This element must
        have been created in the
        //asset type as a Date element
        //Update the testdate field to January 1, 2007
        //Note: the format of the date should match the system setting for Short
        Date.
        repository.assetUpdateCustomDataString(authToken, myAsset.getID(),
            "testdate", "2007-1-1");
    } catch (OpenAPIException lEx) {
        System.out.println("ServerCode = " + lEx.getServerErrorCode());
        System.out.println("Message = " + lEx.getMessage());
        System.out.println("StackTrace:");
        lEx.printStackTrace();
    }
}
```

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12.2.2 Use Case: Creating a new asset from XML

Description
It is also possible to create a new asset from an XML representation of the asset. Schemas can be used to validate the asset XML before creation. The schema for an asset type is available through the Open API as can be seen in the example below.

It is not necessary to do validation yourself, the asset XML will be validated internally before the create happens. If you do want to do your own validation you will have to find a validating XML parser such as Xerces 2.0.

Sample code is as follows:

```java
package com.flashline.sample.assetapi;
import java.io.IOException;
import java.io.StringReader;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.parsers.ParserConfigurationException;
import javax.xml.parsers.SAXParser;
import javax.xml.parsers.SAXParserFactory;
import javax.xml.rpc.ServiceException;
import org.xml.sax.InputSource;
import org.xml.sax.SAXException;
import org.xml.sax.SAXParseException;
import org.xml.sax.helpers.DefaultHandler;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CreateNewAssetFromXML {
    public static void main(String pArgs[]) throws ServiceException,
        ParserConfigurationException, SAXException, IOException {
        String SCHEMA_LANGUAGE = "http://java.sun.com/xml/jaxp/properties/schemaLanguage";
        String XML_SCHEMA = "http://www.w3.org/2001/XMLSchema";
        String SCHEMA_SOURCE = "http://java.sun.com/xml/jaxp/properties/schemaSource"
        SAXParserFactory lSaxParserFactory = null;
        SAXParser lSaxParser = null;
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
```
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
    .getFlashlineRegistry(lURL);

// Login to OER
AuthToken authToken = repository.authTokenCreate(pArgs[1],pArgs[2]);

// Anonymous class to handle validation errors
DefaultHandler lDefaultHandler = new DefaultHandler() {
    public void error(SAXParseException exception) throws SAXException {
        throw exception;
    }

    public void fatalError(SAXParseException exception) throws SAXException {
        throw exception;
    }
};

// Define the asset you want to create in XML

// This is the XML of the asset we're creating. Typically it would come from a GUI or other asset creation mechanism. It is hard coded for this example.

String assetXML = "<asset id="0">
    <asset-type id="145" icon="component.gif"
lastSavedDate="17 Jul 2007 12:00:00 AM">Component</asset-type>
    <mandatory-data>
        <name>NewComponent</name>
        <version>"+Calendar.getInstance().getTimeInMillis()+"</version>
        <description><![CDATA[My Description]]></description>
        <keywords/>
        <notification-email/>
        <applied-policies/>
        <vendor id="0"/>
        <file-informations/>
        <hash-informations/>
        <producing-projects/>
        <submission-files/>
        <applied-compliance-templates/>
        <contacts/>
        <relationships/>
        <categorization-types/>
    </mandatory-data>
    <admin-data/>
</asset>";

// This returns the Schema for the asset type of the asset we're creating
String schema = repository.assetTypeSchemaRead(authToken, 144);

// This block of code shows validating the asset XML against the schema
lSaxParserFactory = SAXParserFactory.newInstance();
lSaxParserFactory.setNamespaceAware(true);
lSaxParserFactory.setValidating(true);
lSaxParser = lSaxParserFactory.newSAXParser();
12.2.3 Use Case: Modifying an asset

Description
Modify the metadata for an existing asset.

Sample Code is as follows:
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Categorization;
import com.flashline.registry.openapi.entity.CategorizationType;
import com.flashline.registry.openapi.query.CategorizationTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ModifyExistingAsset {
    public static void main(String[] pArgs) throws OpenAPIException,
        RemoteException,
        ServiceException {
        try {  
            //////////////////////////////////////////////////////////////////////////
            // Connect to Oracle Enterprise Repository
            //////////////////////////////////////////////////////////////////////////
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);

            lSaxParser.setProperty(SCHEMA_LANGUAGE, XML_SCHEMA);
            lSaxParser.setProperty(SCHEMA_SOURCE, new InputSource(new StringReader(
                schema)));
            lSaxParser.parse(new InputSource(new StringReader(assetXML)),
                lDefaultHandler);
            // If no exception was thrown the asset XML validates and
            // the creation should not fail due to XML formatting errors.
            //////////////////////////////////////////////////////////////////////////
            repository.assetCreateFromXML(authToken, assetXML);
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message    = " + lEx.getMessage());
            System.out.println("StackTrace:");
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            lEx.printStackTrace();
        } catch (ServiceException lEx) {
            lEx.printStackTrace();
        } catch (MalformedURLException lEx) {
            lEx.printStackTrace();
        }   }
}
Use Cases

// Login to OER
AuthToken authToken = repository.authTokenCreate(
pArgs[1], pArgs[2]);

// Read the asset you want to modify
Asset myAsset = repository.assetRead(authToken, 559);
// 559 is the example asset number

// Modify the name, version, description, and notification email
myAsset.setName("New Name");
myAsset.setVersion("New Version");
myAsset.setDescription("New Description");
myAsset.setNotificationEmail("user@example.com");

// Setup arrays used for assigning categorizations
CategorizationType[] lAllCatTypes = null;
Categorization[] lAllCats = null;
CategorizationType[] lCatTypes = new CategorizationType[1];
Categorization[] lCats = new Categorization[1];

// Search for all categorizations that are asset assignable
CategorizationTypeCriteria categorizationTypeCriteria = new CategorizationTypeCriteria();
categorizationTypeCriteria.setNameCriteria("*");
lAllCatTypes = repository.categorizationTypeQuery(authToken, categorizationTypeCriteria);

// Find all the categorizations to be assigned to the asset
for (int i = 0; i < lAllCatTypes.length; i++) {
    CategorizationType lCatType = repository.categorizationTypeRead(authToken, lAllCatTypes[i].getID());
lAllCats = repository.categorizationReadByType(authToken, lCatType, true, true);
    if (lAllCats.length > 0) {
        lCatTypes[0] = lCatType;
        // when we find the first one, use it
        break;
    }
}
lCats[0] = lAllCats[0];

// Modify the asset to use the categorizations
myAsset.setCategorizations(lCats);
myAsset.setCategorizationTypes(lCatTypes);

// Modify the custom access settings for the asset
String[] lCasTypes = repository.customAccessSettingTypesGet(authToken);
String[] lCustomAccessSettings = null;
if (lCasTypes != null && lCasTypes.length > 0) {
    // Add custom access settings here
}
12.2.4 Use Case: Assign users to an asset

**Description**

Multiple users can be assigned to an asset.

**Sample Code is as follows:**

```java
package com.flashline.sample.assetapi;

import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AssignedUser;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.query.UserCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class AssignUsers {
    public static void main(String pArgs[]) throws OpenAPIException,
        RemoteException,
        ServiceException {

    }
}
```
try {

    // Connect to Oracle Enterprise Repository
    URL lURL = null;
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
    .getFlashlineRegistry(lURL);

    // Login to OER
    AuthToken authToken = repository.authTokenCreate(
        pArgs[1], pArgs[2]);

    // Retrieve desired asset
    Asset myAsset = repository.assetRead(authToken, 559);

    // Create array of AssignedUser objects
    AssignedUser[] lUsers = new AssignedUser[3];

    // NOTE:
    // The AssignedUser object has two methods:
    // setUserID(long)
    // setAssignedDate(Calendar).
    // (Specifies the date the user was assigned to the
    // asset. If no date is specified, the current date
    // will be used.)

    AssignedUser lUser = new AssignedUser();
lUser.setUserID(99); // 99 is the admin user id
lUsers[0] = lUser;
lUser = new AssignedUser();
RegistryUser lRegistryUser1 = createRegistryUser(repository, authToken);
lUser.setUserID(lRegistryUser1.getID());
lUsers[1] = lUser;
lUser = new AssignedUser();
RegistryUser lRegistryUser2 = createRegistryUser(repository, authToken);
lUser.setUserID(lRegistryUser2.getID());

    // Add array to the asset that is being updated
    myAsset.setAssignedUsers(lUsers);

    // save the modifications
    repository.assetUpdate(authToken, myAsset);
} catch (OpenAPIException lEx) {
    System.out.println('ServerCode = ' + lEx.getServerErrorCode());
    System.out.println('Message    = ' + lEx.getMessage());
    System.out.println('StackTrace:' + lEx.printStackTrace());
} catch (RemoteException lEx) {
12.2.5 Use Case: Building an asset search

**Description**
Finding all assets that meet certain criteria.

**Sample Code is as follows:**

```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetSummary;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.query.DateRangeSearchTerm;
import com.flashline.registry.openapi.query.SearchTerm;
import com.flashline.registry.openapi.query.TabStatusSearchTerm;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class FindAssets {
    public static void main(String[] args) throws OpenAPIException, RemoteException,
    ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL url = null;
            url = new URL(args[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(url);
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(
                    args[1], args[2]);
            // Search for all assets
```
AssetCriteria criteria = new AssetCriteria();
AssetSummary[] assets = repository.assetQuerySummary(authToken, criteria);

// try a general search which includes Name, version,
// description, and keywords
AssetCriteria criteria = new AssetCriteria();
criteria.setGeneralCriteria("My Asset");
assets = repository.assetQuerySummary(authToken, criteria);

// Search for assets that contain a specific search string
// in one particular field.
AssetCriteria criteria = new AssetCriteria();
criteria.setNameCriteria("My Name");
criteria.setVersionCriteria("My version");
criteria.setDescriptionCriteria("My Description");
assets = repository.assetQuerySummary(authToken, criteria);

// Implementing a Search via the AssetCriteria Object
// --------------------------------------------------
// If no operator is specified when implementing a search
// using the setSearchTerms method in the AssetCriteria
// object, the system will default to the operator EQUALS.
// The operator LIKE must be specified if required for the
// search.
AssetCriteria criteria = new AssetCriteria();
SearchTerm lSearchTerm = new SearchTerm();
lSearchTerm.setKey("name");
lSearchTerm.setOperator("LIKE");
lSearchTerm.setValue("Test");
SearchTerm[] lTerms = new SearchTerm[1];
lTerms[0] = lSearchTerm;
criteria.setSearchTerms(lTerms);
assets = repository.assetQuerySummary(authToken, criteria);

//Search for assets where a specific DATETIME field is a given age
//Not specifying an operator defaults to 'equals'.
DateRangeSearchTerm lTerm = new DateRangeSearchTerm();

//To do a search for all assets that were registered more than 5 days ago
//Set the value to a day 5 days older than the current date. Assume today's
date is 1/10/2007
lTerm.setKey("date-range");
lTerm.setDateFormat("yyyy-MM-dd");
lTerm.setBeginDate("2007-1-5");
lTerm.setBeginOperator("lt");
lTerm.setDateField("registereddate");
lTerms = new SearchTerm[1];
lTerms[0] = lTerm;
criteria.setSearchTerms(lTerms);
assets = repository.assetQuerySummary(authToken, criteria);

//Search for assets where a given date field is within a date range

criteria = new AssetCriteria();
lTerm = new DateRangeSearchTerm();

//date-range is the query key. registereddate is the date field we are searching on

lTerm.setKey("date-range");

lTerm.setDateField("registereddate");
lTerm.setDateFormat("yyyy-MM-yy");
lTerm.setBeginDate("2007-01-01");
lTerm.setBeginOperator("gte");
lTerm.setEndDate("2007-01-10");
lTerm.setEndOperator("lte");

//The following SearchTerm translates to "Assets where the registereddate is greater than or equal to Jan. 1, 2007

//The format defaults to OER's system setting for Short Date Format.

//The format can be set to any valid date format using setDateFormat() and passing the date format.

lTerm.setBeginOperator("lte");
lTerm.setDateField("registereddate");
lTerm.setBeginDate("2007-01-01");
lTerm.setBeginOperator("gte");
lTerm.setEndDate("2007-01-10");
lTerm.setEndOperator("lte");

//The following SearchTerm translates to "Assets where the registereddate is less than or equal to Jan. 10, 2007

criteria.setSearchTerms(new SearchTerm[] {lTerm});

//This query returns all assets that were registered between January 1 and January 10, including those days.

assets = repository.assetQuerySummary(authToken, criteria);

//Search for assets where a given tab has been approved or unapproved

criteria = new AssetCriteria();
TabStatusSearchTerm lTabTerm = new TabStatusSearchTerm();

//tabstatus is the type of search we want to do. overview is the name of the tab we want to search on

lTabTerm.setKey("tabstatus");
lTabTerm.setTabNames(new String[] {"overview"});
lTabTerm.setApproved(true);
criteria.setSearchTerms(new SearchTerm[] {lTabTerm});

//This query returns all assets with the Overview tab being approved

assets = repository.assetQuerySummary(authToken, criteria);

//You may also search by a date range.

lTabTerm.setKey("tabstatus");
lTabTerm.setTabNames(new String[] {"overview"});
lTabTerm.setApproved(false);
lTabTerm.setBeginDate("2007-1-01");
lTabTerm.setBeginOperator("lte");
criteria.setSearchTerms(new SearchTerm[] {lTabTerm});

//The following will return all assets that have the Overview tab unapproved since or before January 1, 2007

assets = repository.assetQuerySummary(authToken, criteria);

//Search for assets where a custom field date has a specific value.
Use Cases

12.2.6 Use Case: Upgrading asset status

Description
Stepping an asset through status levels, from Unsubmitted to Submitted to Accepted to Registered.

Sample Code is as follows:

```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.KeyValuePair;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class PromoteAsset {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException, 
        ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator(lURL).getFlashlineRegistry();
```
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Use Cases

///////////////////////////////////////////////////////////
// Login to OER
///////////////////////////////////////////////////////////
AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
long lAssetID = 559;
///////////////////////////////////////////////////////////
// asset with id 559 would have to be unsubmitted for this to work
AssetCriteria lAssetCriteria = new AssetCriteria();
lAssetCriteria.setIDCriteria(lAssetID);
KeyValuePair lKeyValuePair = repository.assetEvaluate(authToken, lAssetCriteria, "Registration Status");
if (!lKeyValuePair.getValue().equalsIgnoreCase("unsubmitted")) {
    unregisterAsset(repository, authToken, lAssetID);
}
///////////////////////////////////////////////////////////
// promote the asset from unsubmitted to submitted
///////////////////////////////////////////////////////////
repository.assetSubmit(authToken, lAssetID);
///////////////////////////////////////////////////////////
// asset 559 would have to be unsubmitted for this to work
///////////////////////////////////////////////////////////
repository.assetAccept(authToken, lAssetID);
// asset 561 would have to be submitted for this to work
///////////////////////////////////////////////////////////
repository.assetRegister(authToken, lAssetID);
// asset 563 would have to be accepted for this to work
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message    = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}

protected static void unregisterAsset(FlashlineRegistry repository, AuthToken authToken, long pAssetID) {
    try {
        repository.assetUnRegister(authToken, pAssetID);
    } catch (Exception e) {
    }
    try {
        repository.assetUnAccept(authToken, pAssetID);
    } catch (Exception e) {
    }
    try {
        repository.assetUnSubmit(authToken, pAssetID);
    } catch (Exception e) {
    }
}
12.2.7 Use Case: Downgrading asset status

Description
The reverse of the previous use case, stepping an asset through status levels, from
Registered to Accepted to Submitted to Unsubmitted.

Sample Code is as follows:

```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.KeyValuePair;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class DemoteAsset {
    public static void main(String[] pArgs) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            try {
                URL lURL = null;
                lURL = new URL(pArgs[0]);
                FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                        .getFlashlineRegistry(lURL);
            }

            // Login to OER
            AuthToken authToken = repository.authTokenCreate(
                    pArgs[1], pArgs[2]);
            long lAssetID = 559;

            // asset with id 559 would have to be registered for this to work
            AssetCriteria lAssetCriteria = new AssetCriteria();
            lAssetCriteria.setIDCriteria(lAssetID);
            KeyValuePair lKeyValuePair = repository.assetEvaluate(authToken,
                    lAssetCriteria, "Registration Status");
            if (lKeyValuePair.getValue().equalsIgnoreCase("registered")) {
                registerAsset(repository, authToken, lAssetID);
            }

            // demote the asset from registered to accepted
            repository.assetUnRegister(authToken, lAssetID);

            // demote the asset from accepted to submitted
            repository.assetUnAccept(authToken, lAssetID);

            // demote the asset from submitted to unsubmitted
            repository.assetUnSubmit(authToken, lAssetID);
        } catch (OpenAPIException lEx) {
      }
    }
```
Use Cases

12.2.8 Use Case: Apply and remove Compliance Templates from a project

Description
Compliance Templates can be added and removed from multiple projects.

Note: An OpenAPIException will occur if an asset is applied to a project and that asset is NOT a Compliance Template.

Sample Code is as follows:

```java
class AddRemoveTemplate {
    public static void main(String[] args) throws OpenAPIException {
        try {
            repository.assetSubmit(authToken, pAssetID);
        } catch (Exception e) {
        }
        try {
            repository.assetAccept(authToken, pAssetID);
        } catch (Exception e) {
        }
        try {
            repository.assetRegister(authToken, pAssetID);
        } catch (Exception e) {
        }
    }
}
```
RemoteException,
ServiceException {
try {
URL lURL = null;
lURL = new URL(pArgs[0]);
//////////////////////////////////////////////////
// Connect to Oracle Enterprise Repository
//////////////////////////////////////////////////
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
   .getFlashlineRegistry(lURL);
//////////////////////////////////////////////////
// Login to OER
//////////////////////////////////////////////////
AuthToken authToken = repository.authTokenCreate(pArgs[1],
   pArgs[2]);
//////////////////////////////////////////////////
// Read or Create a Compliance Template Type and Asset
//////////////////////////////////////////////////
AssetType ctType = null;
AssetTypeCriteria lAssetTypeCriteria = new AssetTypeCriteria();
lAssetTypeCriteria.setArcheTypeCriteria("Compliance Template Type");
AssetType[] lAssetTypes =
   repository.assetTypeQuery(authToken, lAssetTypeCriteria);
if (lAssetTypes!=null && lAssetTypes.length>0) {
   ctType = lAssetTypes[0];
} else {
   ctType = repository.assetTypeCreateComplianceTemplate(authToken,
      "My Compliance Template Type"+Calendar.getInstance().getTimeInMillis());
}
Asset lComplianceTemplateAsset = null;
AssetCriteria lAssetCriteria = new AssetCriteria();
lAssetCriteria.setAssetTypeCriteria(ctType.getID());
Asset[] lAssets = repository.assetQuery(authToken, lAssetCriteria);
if (lAssets!=null && lAssets.length>0) {
   lComplianceTemplateAsset = lAssets[0];
} else {
   lComplianceTemplateAsset = repository.assetCreate(authToken, 
      "My Compliance Template",
      ""+Calendar.getInstance().getTimeInMillis(), ctType.getID());
}
///////////////////////////////////////////////////
// Create a String array of Project IDs that the Compliance
// Template will be applied to.
///////////////////////////////////////////////////
String[] lProjectIDs = { "50000" ];
///////////////////////////////////////////////////
// Apply template to the projects.
///////////////////////////////////////////////////
repository.assetApplyToProjects(authToken, lProjectIDs,
   lComplianceTemplateAsset);
///////////////////////////////////////////////////
// Retrieve an array of Projects that this template is
// applied to.
///////////////////////////////////////////////////
Project[] lProjects = repository.assetReadAppliedToProjects(
   authToken, lComplianceTemplateAsset);
String lMsg = 'Compliance Template "' + lComplianceTemplateAsset.getName();
lMsg += '" applied to Project(s): ";
for (int i=0; lProjects!=null && i<lProjects.length; i++) {
12.2.9 Use Case: Creating the new version of an asset and retiring the old version

**Description**
Update the repository to reflect the availability of a new version of an asset, and the retirement of the asset's previous version.

**Sample Code is as follows:**
```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.RelationshipType;
import com.flashline.registry.openapi.query.RelationshipTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CreateNewVersionOfAsset {
    public static void main(String pArgs[]) throws OpenAPIException,
    RemoteException,
    ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            lMsg += lProjects[i].getName()+(i+1==lProjects.length ? "." : ", ");
            System.out.println(lMsg);
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message    = " + lEx.getMessage());
            System.out.println("StackTrace: ");
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            lEx.printStackTrace();
        } catch (ServiceException lEx) {
            lEx.printStackTrace();
        } catch (MalformedURLException lEx) {
            lEx.printStackTrace();
        }
    }
}
```
URL lURL = null;
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
    .getFlashlineRegistry(lURL);

/////////////////////////////////////////////////////////////
// Login to OER
/////////////////////////////////////////////////////////////
AuthToken authToken = repository.authTokenCreate(
    pArgs[1], pArgs[2]);

/////////////////////////////////////////////////////////////
// Read old asset.
// Update metadata as necessary.
// Save as new asset.
/////////////////////////////////////////////////////////////
Asset myAsset = repository.assetRead(authToken, 561);

/////////////////////////////////////////////////////////////
// Find the 'next-version' relationship for the asset
/////////////////////////////////////////////////////////////
RelationshipType[] allRelationshipTypes =
    getAllRelationshipTypes(repository, authToken);
for (int i = 0; i < allRelationshipTypes.length; i++) {
    if (allRelationshipTypes[i].getName().equals("next-version")) {
        // This is the relationship type, modify the assets that are related
        // using it
        RelationshipType myRelationshipType = allRelationshipTypes[i];
        // Add the old version to list of previous versions of the
        // newly created asset
        long[] oldSecondaryIDs = myRelationshipType.getSecondaryIDs();
        long[] newSecondaryIDs = new long[oldSecondaryIDs.length + 1];
        for (int j = 0; j < oldSecondaryIDs.length; j++) {
            newSecondaryIDs[j] = oldSecondaryIDs[j];
        }
        newSecondaryIDs[newSecondaryIDs.length - 1] = 561;
        myRelationshipType.setSecondaryIDs(newSecondaryIDs);
    }
}
Asset myNewAsset = repository.assetCreate(authToken,
    myAsset.getName(), "" + Calendar.getInstance().getTimeInMillis(),
    myAsset.getTypeID());
myNewAsset.setRelationshipTypes(allRelationshipTypes);

/////////////////////////////////////////////////////////////
// Update the new asset
/////////////////////////////////////////////////////////////
myNewAsset = repository.assetUpdate(authToken, myNewAsset);

/////////////////////////////////////////////////////////////
// retire the old asset
/////////////////////////////////////////////////////////////
repository.assetRetire(authToken, 561);
}

} catch (OpenAPIException lEx) { 
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message    = " + lEx.getMessage());
    lEx.printStackTrace();
} catch (RemoteException lEx) {
lEx.printStackTrace();
} catch (ServiceException lEx) {
}
**Use Cases**

### 12.2.10 Use Case: "Housekeeping"

**Description**
Deleting groups of assets that no longer belong in the repository.

**Sample Code is as follows:**

```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class DeleteAssets {
    public static void main(String pArgs[]) throws OpenAPIException,
        RemoteException,
        ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);
            AuthToken authToken = repository.authTokenCreate(
```
Use Cases

```java
pArgs[1], pArgs[2]);

// find the assets to delete
AssetCriteria criteria = new AssetCriteria();
criteria.setGeneralCriteria("delete me");
Asset[] assets = repository.assetQuery(authToken, criteria);

// Iterate through assets, deleting them one at a time.
for (int i = 0; i < assets.length; i++) {
    repository.assetDelete(authToken, assets[i].getID());
}
}
```}

**Pitfalls:**

Asset deletion is permanent. The OpenAPI provides no method for restoring deleted assets.

**Methods to Avoid:**

The following methods serve no purpose in the context of the OpenAPI, and should therefore be avoided:

- setAcceptedByID
- setAcceptedByName
- setAcceptedByDate
- setActiveStatus
- setAssigned
- setAssignedToID
- setAssignedDate
- setCategorizationTypes
- setCreatedByID
- setCreatedByName
- setCreatedByDate
- setDeleted
- setEntityType
- setExtractable
Use Cases

- setFullAsset
- setInactive
- setKey
- setLoadedDate
- setLongName
- setNotifyUpdatedRelationships
- setRegisteredByID
- setRegisteredByName
- setRegisteredDate
- setRegistrationStatus
- setRegistrationStatusBaseName
- setRegistrationStatusRegistered
- setRegistrationStatusRejected
- setRegistrationStatusSubmittedPendingReview
- setRegistrationStatusSubmittedUnderReview
- setRegistrationStatusUnsubmitted
- setRejectionReason
- setRetired
- setSubmittedByID
- setSubmittedByName
- setSubmittedDate
- setTypeIcon
- typeName
- setUpdatedDate
- setVendorName
- setVisible

Avoiding Common Mistakes

- Rules for Assets
  - The Asset must be assigned to an active and valid Asset Type.
  - An Asset’s name/version strings must be a unique pair.
  - A new Asset’s ID must be 0.
  - A new Asset’s active status must be 'active'.

Missing Features

- Helper methods for modifying customData
- Additional validation
  
  When saving an asset, Oracle Enterprise Repository currently validates that:
  - The Asset type is valid and active
# Use Cases

- The Name/Version is unique
- When creating an asset, that the active status is valid
- When updating an asset, that the asset already exists
- Contacts are not duplicated
- Categorizations are valid
- Future versions of the repository will validate that:
  * CustomData is well formed XML
  * CustomData contains XML that is valid based on the asset type

## 12.2.11 Use Case: Finding assets and updating custom-data

### Description
Perform a search for all assets with a specific custom-data value, and update some custom-data for each of those assets. Note: The asset is automatically saved when using the assetUpdateCustomDataNode method.

### Sample Code is as follows:

```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetSummary;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.query.SearchTerm;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateAssetTestResults {
    public static void main(String[] pArgs) throws OpenAPIException,
            RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().
                    getFlashlineRegistry(lURL);
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                    pArgs[2]);
            // create a criteria object searching for all assets with a
custom-data element for test-frequency equal to 'DAILY'
            SearchTerm[] searchTermArray = new SearchTerm[1];
            SearchTerm term = new SearchTerm();
            term.setKey("/asset/custom-data/test-frequency");
            searchTermArray[0] = term;
        }
    }
}
```
12.2.12 Use Case: Reading an Asset's Tabs

**Description**
Read the tabs of an asset.

**Sample Code is as follows:**
```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.TabBean;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class AssetReadTabs {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException,
    ```
12.2.13 Use Case: Retrieve An Asset's Tab Based on TabType

Description
Get a specific asset tab by tabtype.

Sample Code is as follows:
```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.TabBean;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class AssetGetTabByType {
    public static void main(String pArgs[]) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new
            FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            TabBean[] lTabBeans = null;
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],pArgs[2]);
            // read an asset’s tabs
            lTabBeans = repository.assetTabsRead(authToken, 559);
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message    = " + lEx.getMessage());
            System.out.println("StackTrace:");
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            lEx.printStackTrace();
        } catch (ServiceException lEx) {
            lEx.printStackTrace();
        } catch (MalformedURLException lEx) {
            lEx.printStackTrace();
        }
    }
}
```
12.2.14 Use Case: Approving and Unapproving a tab

**Description**
Approve or unapprove an asset's tab.

**Sample Code is as follows:**
```java
package com.flashline.sample.assetapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class ApproveUnapproveTab {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            Asset lAsset = null;
            TabBean lTabBean = null;
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // read an asset
            lAsset = repository.assetRead(authToken, 559);
            // get an asset's tab by tabbeantype
            lTabBean = repository.assetTabRead(authToken, lAsset.getID(), 458);
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message = " + lEx.getMessage());
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            lEx.printStackTrace();
        } catch (ServiceException lEx) {
            lEx.printStackTrace();
        } catch (MalformedURLException lEx) {
            lEx.printStackTrace();
        }
    }
}
```
// Connect to Oracle Enterprise Repository

URL lURL = null;
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new
FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);

// Login to OER

AuthToken authToken = repository.authTokenCreate(pArgs[1],pArgs[2]);

// approve an asset tab

repository.assetTabApprove(authToken, 559, 1864);

// unapprove an asset tab

repository.assetTabUnapprove(authToken, 559, 1864);

} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message    = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
} } }
This chapter provides an overview of AssetType API and describes the use cases using this API.

This chapter contains the following sections:

- Section 13.1, "Overview"
- Section 13.2, "Use Cases"

13.1 Overview

Types (Asset Types and Compliance Templates) define the structure of assets. Types consist of two main parts:

- **Editor**
  
  Defines the metadata that is stored for the assets and determines how metadata elements are organized in the Asset Editor.

- **Viewer**
  
  Defines how the metadata elements will be displayed in the asset detail in Oracle Enterprise Repository.

When creating or editing a Type, acceptable value lists and categorization types are used as metadata elements. These metadata elements are referenced by ID in the Editor and Viewer XML for the Type.

When creating or editing assets, Types define the metadata elements that are used in the custom data for the asset (Asset.GetCustomData()).
Use Cases

13.2 Use Cases

This section describes the use cases using the Asset Type API. It contains the following topics:

- Section 13.2.1, "Use Case: Create and edit a new Type"
- Section 13.2.2, "Use Case: Create a Compliance Template Type"
- Section 13.2.3, "Use Case: Find Types"
- Section 13.2.4, "Use Case: Read tab types"
- Section 13.2.5, "Use Case: Retrieve all Asset Type tabs"

13.2.1 Use Case: Create and edit a new Type

Description
Adding a new Type to the repository.

Sample code is as follows:

```java
package com.flashline.sample.assettypeapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CreateNewAssetType {
    public static void main(String pArgs[]) throws RemoteException,
    OpenAPIException,
```
Use Cases

AssetType API

13.2.2 Use Case: Create a Compliance Template Type

Description
Adding a new Compliance Template Type to the repository.
Sample code is as follows:

```java
package com.flashline.sample.assettypeapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CreateNewComplianceTemplateType {
  public static void main(String pArgs[]) throws RemoteException,
      OpenAPIException,
          ServiceException {
    try {
    // Connect to Oracle Enterprise Repository
    URL lURL = null;
    lURL = new URL(pArgs[0]);
    FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
        .getFlashlineRegistry(lURL);
    // Authenticate with OER
    AuthToken authToken = repository.authTokenCreate(pArgs[1],
        pArgs[2]);
    // Create a new compliance template.
    String newAssetTypeName = "My Compliance Template"
        + Calendar.getInstance().getTimeInMillis();
    AssetType newAssetType = repository
        .assetTypeCreateComplianceTemplate(authToken, newAssetTypeName);
  } catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message    = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
  } catch (RemoteException lEx) {
    lEx.printStackTrace();
  } catch (ServiceException lEx) {
    lEx.printStackTrace();
  } catch (MalformedURLException lEx) {
    lEx.printStackTrace();
  }
}
```

13.2.3 Use Case: Find Types

Description
Locating a Type in the repository.
Sample Code is as follows:

```java
package com.flashline.sample.assettypeapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetTypeCriteria;
import com.flashline.registry.openapi.query.SearchTerm;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class FindAssetType {
    public static void main(String pArgs[]) throws RemoteException,
            OpenAPIException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            try {
                URL lURL = null;
                lURL = new URL(pArgs[0]);
                FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                        .getFlashlineRegistry(lURL);
                // Authenticate with OER
                AuthToken authToken = repository.authTokenCreate(pArgs[1],
                        pArgs[2]);
                // Create SearchTerms and set them on the AssetSearchCriteria
                AssetTypeCriteria assetTypeCriteria = new AssetTypeCriteria();
                SearchTerm[] searchTerms = new SearchTerm[1];
                searchTerms[0] = new SearchTerm();
                searchTerms[0].setKey("name");
                searchTerms[0].setValue("Component");
                assetTypeCriteria.setSearchTerms(searchTerms);
                // Perform the search using the specified criteria
                AssetType[] assetTypes = repository.assetTypeQuery(authToken,
                        assetTypeCriteria);
            } catch (OpenAPIException lEx) {
                System.out.println("ServerCode = " + lEx.getServerErrorCode());
                System.out.println("Message    = " + lEx.getMessage());
                System.out.println("StackTrace:");
                lEx.printStackTrace();
            } catch (RemoteException lEx) {
                lEx.printStackTrace();
            } catch (ServiceException lEx) {
                lEx.printStackTrace();
            } catch (MalformedURLException lEx) {
                lEx.printStackTrace();
            }
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message    = " + lEx.getMessage());
            System.out.println("StackTrace:");
            lEx.printStackTrace();
        }
    }
}
```
Methods to Avoid:

- `setIcon`
- `setID`

13.2.4 Use Case: Read tab types

**Description**
Retrieve the list of tabs available for an asset type.

**Sample Code is as follows:**
```java
class ReadTabTypes {
    public static void main(String[] args) throws OpenAPIException, RemoteException, ServiceException, MalformedURLException {
        try {
            // Connect to Oracle Enterprise Repository
            URL url = new URL(args[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(url);
            TabTypeBean[] tabTypeBeans = null;
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(args[1], args[2]);
            // read the tab types of an assettype
            tabTypeBeans = repository.assetTypeTabsRead(authToken, 100);
            catch (OpenAPIException ex) {
                System.out.println("ServerCode = " + ex.getServerErrorCode());
                System.out.println("Message = " + ex.getMessage());
                ex.printStackTrace();
            }
            catch (RemoteException ex) {
                ex.printStackTrace();
            }
            catch (ServiceException ex) {
                ex.printStackTrace();
            }
            catch (MalformedURLException ex) {
                ex.printStackTrace();
            }
        }
    }
}
```
### 13.2.5 Use Case: Retrieve all Asset Type tabs

**Description**
Retrieves all asset type tabs within the Oracle Enterprise Repository.

**Sample Code is as follows:**

```java
package com.flashline.sample.assettypeapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.TabTypeBean;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ReadTabTypes {
    public static void main(String pArgs[]) throws OpenAPIException,
    RemoteException,
    ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new
            FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            TabTypeBean[] lTabTypeBeans = null;
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],pArgs[2]);
            // read the tab types of an assettype
            lTabTypeBeans = repository.assetTypeTabsRead(authToken, 100);
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message = " + lEx.getMessage());
            System.out.println("StackTrace: ");
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            lEx.printStackTrace();
        } catch (ServiceException lEx) {
            lEx.printStackTrace();
        } catch (MalformedURLException lEx) {
            lEx.printStackTrace();
        }
    }
}
```

**Example of the RelationshipTypeQuery**

```java
try {
    RelationshipTypeCriteria rCriteria = new RelationshipTypeCriteria();
```
RelationshipType[] allRelationshipTypes =
FlashlineRegistry.relationshipQuery(lAuthToken, rCriteria);
}
catch (OpenAPIException e)
{
    e.printStackTrace();
}
catch (RemoteException re)
{
    re.printStackTrace();
}
This chapter provides an overview of Categorization Types and Categorizations API and describes the use cases using this API.

This chapter contains the following sections:

- Section 14.1, "Overview"
- Section 14.2, "Use Cases"

### 14.1 Overview

It is important to understand the difference between Categorizations and Categorization Types.

Categorization Types provide the means to define custom taxonomies. Categorizations are subsets of Categorization Types, and are assigned to assets. For example, a Categorization Type called Technology might contain Java, .NET and COBOL as its assignable Categorizations. Additionally, sub-categorizations under Java might include Servlet and Applet. So an asset in Oracle Enterprise Repository might be assigned to the Java Categorization, or it might be more specifically assigned to the Servlet Sub-categorization.

The Categorizations to which a particular asset may be assigned are determined by the Categorization Types defined for that asset’s Type. As in the example above, if the Technology Categorization Type is defined for Asset Type XYZ, assets of type XYZ may be assigned to the Java, .NET, or COBOL, Categorizations, or to the Sub-categorizations Servlet or Applet. This taxonomy structure allows assets to be grouped and viewed in a variety of ways within Oracle Enterprise Repository.

Categorization types can also be associated with projects (if Oracle Enterprise Repository is configured for that feature). Any project-assignable Categorization Type is available to all projects. As with assets, a project can be associated with any of the Categorizations available within its assigned Categorization Type(s).

Rules for Categorization Types and Categorizations include:

- The Repository can contain 0 to n Categorization Types with each Categorization Type containing 0 to n Categorizations.
- Each Categorization can contain 0 to n Sub-categorizations.
- Each Categorization Type must have a unique name. This name cannot contain spaces or special characters.
■ As an option, Categorizations within a given Categorization Type may be made mutually exclusive. That is, when a list of Categorizations is presented, only one may be selected.

■ When the Mutually Exclusive option is selected for a Categorization Type, Oracle Enterprise Repository enforces the rule for future usage only. Existing references to multiple selected categorizations within the Type are unchanged.

■ When so configured, Categorization Types can be assigned to projects. This allows projects in Oracle Enterprise Repository to be organized by Categorization Type/Categorization.

■ If the configuration of a specific Categorization Type is changed to prevent its assignment to Projects, the change affects only subsequent Project assignment. The change does not affect the Categorization Type’s assignment to existing Projects.

■ Categorization Types may be deleted from Oracle Enterprise Repository. However, doing so also deletes all categorizations within the deleted Categorization Type. Exercise caution when performing this task.

■ Categorizations may be deactivated. Deactivation prevents future use of the Categorization (and all sub-categorizations) but does not delete it from Oracle Enterprise Repository. Existing references to a Categorization are unaffected by deactivation.

■ Deactivated Categorizations may be reactivated, reversing the aforementioned process.

■ Within a given Categorization Type, all Categorizations must be uniquely named. However, the same name may be shared by multiple Categorizations residing in different Categorization Types.

The following methods provide the ability to create, update, list, query, and delete categorization types.

14.2 Use Cases

This section describes the use cases using the Categorization Types and Categorizations API. It contains the following topics:

■ Section 14.2.1, "Use Case: Create a Categorization Type"
■ Section 14.2.2, "Use Case: Manipulate Categorization Types"
■ Section 14.2.3, "Use Case: Manipulate Categorizations"

14.2.1 Use Case: Create a Categorization Type

Description
The element name given to a newly created Categorization Type cannot contain special characters or spaces. There are no restrictions on the characters used for singular and plural display names. The pExclusiveAssign Boolean determines whether one or multiple Categorizations can be assigned within the Categorization Type. The pExclusiveAssign Boolean determines if the Categorization Type is project-assigned. The method prevents duplication of existing Categorizations, and returns the created Categorization Type.

Sample code is as follows:

```java
package com.flashline.sample.categorizationtypesandapi;
```
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.CategorizationType;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

class CreateCategorizationType {
    public static void main(String[] args) throws java.rmi.RemoteException, OpenAPIException {
        try {
            // Connect to Oracle Enterprise Repository
            URL url = null;
            url = new URL(args[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(url);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(args[1], args[2]);
            // Create the categorization type
            String name = "Name";
            String singularDisplay = "SingularDisplay";
            String pluralDisplay = "PluralDisplay";
            boolean exclusiveAssign = true;
            boolean projectAssign = true;
            CategorizationType categorizationType = repository.categorizationTypeCreate(authToken, name, singularDisplay, pluralDisplay, exclusiveAssign, projectAssign);
            // clean up
            repository.categorizationTypeDelete(authToken, categorizationType);
        } catch (OpenAPIException ex) {
            System.out.println("ServerCode = " + ex.getServerErrorCode());
            System.out.println("Message = " + ex.getMessage());
            System.out.println("StackTrace: ");
            ex.printStackTrace();
        } catch (RemoteException ex) {
            ex.printStackTrace();
        } catch (ServiceException ex) {
            ex.printStackTrace();
        } catch (MalformedURLException ex) {
            ex.printStackTrace();
        }
    }
}
14.2.2 Use Case: Manipulate Categorization Types

Description
The following operations are demonstrated in the example below:

- Retrieve Categorization Types by ID
- Update a Categorization Type
- Delete a Categorization Type
- Exercise Caution! This method deletes the entire Categorization Type and all Categorizations contained therein.
- Query a Categorization Type
- Use various terms, including name, type, and if a Categorization Type is assigned to projects.
- Retrieve all Categorization Types

Sample code is as follows:

```java
class CategorizationExamples {
    public static void main(String[] pArgs) throws ServiceException, RemoteException, OpenAPIException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // Create a Categorization Type
            CategorizationType categorizationType = repository
                .categorizationTypeCreate(authToken, "exampleType", "Example Type", "Example Types", false, true);
            // Find and update a categorization type
        }
    }
}
```
```java
CategorizationTypeCriteria categorizationTypeCriteria = new
  CategorizationTypeCriteria();
boolean projectAssign = true;
categorizationTypeCriteria.setProjectAssignCriteria(projectAssign + "");
CategorizationType[] categorizationTypes = repository
  .categorizationTypeQuery(authToken, categorizationTypeCriteria);
  
// Set plural display name
  categorizationType.setDisplayPlural("Updated Example Types");
// Set singular display name
  categorizationType.setDisplaySingular("Updated Example Type");
// Set Categorization Type name
  categorizationType.setName("updatedExampleType");
// Set Categorization Type exclusive assign
  categorizationType.setExclusiveAssign(true);
// Set Categorization Type project Assignable
  categorizationType.setProjectAssignable(false);
// Update Categorization Type
  categorizationType = repository.categorizationTypeUpdate(
      authToken, categorizationType);
// Read a Categorization Type
CategorizationType categorizationTypeRead = repository
  .categorizationTypeRead(authToken, categorizationType.getID());
// Create a Categorization within a Categorization Type
// Create a Categorization within a Categorization (a.k.a. a
  // sub-categorization or child categorization)
// method validates that:
// - no child categorization with the same name exists within the
  // parent categorization.
// - the categorization type is valid
// - the parent categorization is valid.
// Create a Categorization within a Categorization
  categorization = repository.categorizationCreate(
      authToken, "Example Categorization", categorizationType);
// Create a Categorization within a Categorization
  childCategorization = repository.categorizationChildCreate(
      authToken, "Example Child Categorization", categorization);
childCategorization.setName("Updated Example Child Categorization");
childCategorization = repository.categorizationUpdate(
      authToken, childCategorization, categorizationType);
// Observe various properties of a categorization. Note that the
// properties are not being assigned to local variables in
// the interest of brevity...
// Get Categorization parent id
  categorizationRead.getParentID();
// Get Categorization active status
  categorizationRead.getActiveStatus();
// Get Categorization ID
  categorizationRead.getID();
// Get Categorization name
  categorizationRead.getName();
// Get Categorization recursive name
  categorizationRead.getRecursiveName();
```
Methods to Avoid

The methods listed below are for internal Oracle Enterprise Repository use only. Incorrect use of these methods may disrupt the functionality of Categorization Types.
(though permanent damage is unlikely). The functionality provided by these methods is incorporated in the Oracle Enterprise Repository CategorizationType methods.

- `getActiveStatus()` int - CategorizationType
- `getCategorizations()` Categorizations[] - CategorizationType
- `GetEntityType()` String - CategorizationType
- `getKey()` String - CategorizationType
- `getTypeDesc()` TypeDesc - CategorizationType
- `hashCode()` int - CategorizationType
- `isCustom()` boolean - CategorizationType
- `isFlat()` boolean - CategorizationType
- `isSystemOnly()` boolean - CategorizationType
- `setActiveStatus(int activeStatus)` void - CategorizationType
- `setAssetAssignable(boolean assetAssignable)` void - CategorizationType
- `setCategorizations(Categorizations[] categorizations)` void - CategorizationType
- `setCustom(boolean custom)` void - CategorizationType
- `setEntityType(String entityType)` void - CategorizationType
- `setFlat(boolean flat)` void - CategorizationType
- `setID(long ID)` void - CategorizationType
- `setKey(String key)` void - CategorizationType
- `setSystemOnly(boolean systemOnly)` void - CategorizationType

14.2.3 Use Case: Manipulate Categorizations

**Description**

The following code sample illustrates creation, updating, listing, and deactivation/reactivation of Categorizations. As stated above, Categorizations are subordinate to Categorization Types. That is, a Categorization belongs to a Categorization Type.

**Sample Code is as follows:**

```java
package com.flashline.sample.categorizationtypesandapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Categorization;
import com.flashline.registry.openapi.entity.CategorizationType;
import com.flashline.registry.openapi.query.CategorizationTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CategorizationExamples {
    public static void main(String pArgs[]) throws ServiceException,
        RemoteException,
```
OpenAPIException {
try {
    // Connect to Oracle Enterprise Repository
    URL lURL = null;
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
            .getFlashlineRegistry(lURL);
    // Authenticate with OER
    AuthToken authToken = repository.authTokenCreate(pArgs[1],
            pArgs[2]);
    // Create a Categorization Type
    CategorizationType categorizationType = repository
            .categorizationTypeCreate(authToken, "exampleType", "Example Type",
            "Example Types", false, true);
    // Find and update a categorization type
    CategorizationTypeCriteria categorizationTypeCriteria = new
            CategorizationTypeCriteria();
    boolean projectAssign = true;
categorizationTypeCriteria.setProjectAssignCriteria(projectAssign + "");
CategorizationType[] categorizationTypes = repository
            .categorizationTypeQuery(authToken, categorizationTypeCriteria);
    // Set plural display name
categorizationType.setDisplayPlural("Updated Example Types");
    // Set singular display name
categorizationType.setDisplaySingular("Updated Example Type");
    // Set Categorization Type name
    categorizationType.setName("updatedExampleType");
    // Set Categorization Type exclusive assign
    categorizationType.setExclusiveAssign(true);
    // Set Categorization Type project Assignable
    categorizationType.setProjectAssignable(false);
    // Update Categorization Type
categorizationType = repository.categorizationTypeUpdate(
            authToken, categorizationType);
    // Read a Categorization Type
    CategorizationType categorizationTypeRead = repository
            .categorizationTypeRead(authToken, categorizationType.getID());
    // Create a Categorization within a Categorization Type
    Categorization categorization = repository.categorizationCreate(
            authToken, "Example Categorization", categorizationType);
    // Create a Categorization within a Categorization (a.k.a. a
    // sub-categorization or child categorization)
    // method validates that:
    // - no child categorization with the same name exists within the
    //   parent categorization.
    // - the categorization type is valid
    // - the parent categorization is valid.
}
Categorization childCategorization = repository
    .categorizationChildCreate(authToken, "Example Child Categorization",
        categorizationType, categorization);
childCategorization.setName("Updated Example Child Categorization");
childCategorization = repository.categorizationUpdate(authToken,
    childCategorization, categorizationType);

// Observe various properties of a categorization. Note that the
// properties are not being assigned to local variables in
// the interest of brevity...

Categorization categorizationRead = repository.categorizationRead(
    authToken, childCategorization.getID());

// Get Categorization parent id
// categorizationRead.getParentID();
// Get Categorization active status
categorizationRead.getActiveStatus();
// Get Categorization ID
categorizationRead.getID();
// Get Categorization name
categorizationRead.getName();
// Get Categorization recursive name
categorizationRead.getRecursiveName();
// Get Categorization Categorization Type ID
categorizationRead.getTypeID();

// Retrieve the full tree of categorizations for a Categorization Type.
// This means that the Categorization entity returned will have children
// which contain their children (if any), and so on.

Categorization[] categorizationArray = repository.categorizationReadByType(
    authToken, categorizationType, active, fullTree);

// Get children categorizations for categorization
Categorization[] childCategorizations = repository.categorizationChildRead(authToken,
    categorizationType, categorization, active);

// Deactivate a Categorization
// category = repository.categorizationDeactivate(authToken,
//        categorization, categorizationType);
// pActive is set to "true" so that the method returns
// only active categorizations
Categorization[] activeCategorizations = repository.categorizationChildRead(authToken,
    categorizationType, categorization, true);

// Get inactive child Categorizations
Categorization[] inactiveCategorizations = repository.categorizationChildRead(authToken,
    categorizationType, categorization, false);

// Reactivate Categorizations
// for(int i=0; i<inactiveCategorizations.length; i++)
//    category = repository.categorizationReactivate(authToken,
//        inactiveCategorizations[i], categorizationType);
Methods to Avoid:
The methods listed below are for internal Oracle Enterprise Repository use only and should not be used. Incorrect use of these methods could cause improper functioning of categorizations. The functions provided by these methods provide are incorporated in the Oracle Enterprise Repository categorization methods.

- getDescription() String - Categorization
- GetEntityType() String - Categorization
- getKey() String - Categorization
- getLevel() long - Categorization
- getType() CategorizationType - Categorization
- getTypeDesc() TypeDesc - Categorization
- hashCode() int - Categorization
- set_super(Categorization _super) void - Categorization
- setActiveStatus(int activeStatus) void - Categorization
- setDeleted(boolean deleted) void - Categorization
- setDescription(String description) void - Categorization
- setEntityType(String entityType) void - Categorization
- setID(long ID) void - Categorization
- setKey(String key) void - Categorization
- setRecursiveName(String recursiveName) void - Categorization
- setType(CategorizationType type) void - Categorization
- setTypeID(long ID) void - Categorization
This chapter provides an overview of CMF Entry Type API and describes the use cases using this API.

This chapter contains the following sections:

- Section 15.1, "Overview"
- Section 15.2, "Use Cases"

15.1 Overview

CMF Entry Types describe metadata that may be attached to assets. CMF Entry Types are identified by an id and a single name string.

Validation - When saving a CMF Entry Type, Oracle Enterprise Repository currently validates that:

- The CMF Entry Type name length is in bounds
- The CMF Entry Type name is unique
- When updating a CMF Entry Type, a CMF Entry Type ID is present

Related Subsystems

A CMF Entry is linked to an asset from the perspective of the asset. CMF Entry Types define parameters for these entries.

Additional Import(s) Required

```java
import com.flashline.registry.openapi.entity.MetadataEntryTypeSummary;
import com.flashline.registry.openapi.query.MetadataEntryTypeCriteria;
```

15.2 Use Cases

This section describes the use cases using the CMF Entry Type API. It contains the following topics:

- Section 15.2.1, "Use Case: Manipulating CMF Entry Types"

15.2.1 Use Case: Manipulating CMF Entry Types

Description

- Adding a new CMF Entry Type to Oracle Enterprise Repository.
Assigning an existing CMF Entry Type to an asset.

Sample code is as follows:

```java
package com.flashline.sample.metadataentrytypeapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.MetadataEntryTypeSummary;
import com.flashline.registry.openapi.query.MetadataEntryTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class MetadataEntryTypes {
    public static void main(String pArgs[])
        throws OpenAPIException,
        RemoteException,
        ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new
            FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // Create a new CMF Entry Type
            String newMetadataEntryTypeName = "Sample MetadataEntryType";
            MetadataEntryTypeSummary newMetadataEntryType =
            repository.metadataEntryTypeCreate(authToken, newMetadataEntryTypeName);
            System.out.println("The new MetadataEntryType id =" +
            newMetadataEntryType.getID() + "\"\"");
            // Find a CMF Entry Type
            MetadataEntryTypeCriteria criteria = new MetadataEntryTypeCriteria();
            criteria.setNameCriteria("Sample");
            MetadataEntryTypeSummary[] metadataEntryTypes =
            repository.metadataEntryTypeQuery(authToken, criteria);
            long myMetadataEntryTypeID = metadataEntryTypes[0].getID();
            System.out.println("The MetadataEntryType name =" +
            metadataEntryTypes[0].getName() + "\"\"");
            // Delete a CMF Entry Type
            repository.metadataEntryTypeDelete(authToken, myMetadataEntryTypeID);
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message = " + lEx.getMessage());
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            System.out.println("RemoteException: " + lEx.getMessage());
            lEx.printStackTrace();
        }
    }
}
```
lEx.printStackTrace();
) catch (ServiceException lEx) {
    lEx.printStackTrace();
) catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
This chapter provides an overview of Custom Access Settings API and describes the use cases using this API.

This chapter contains the following sections:

- Section 16.1, "Overview"
- Section 16.2, "Use Cases"

16.1 Overview

The Custom Access Settings Subsystem is used to provide a Web Services-based mechanism to retrieve Oracle Enterprise Repository Custom Access Settings (CAS). Example 16–1 describes a sample Custom Access Settings code.

**Example 16–1  Example of Custom Access Settings Code**

Working code for Custom Access Settings Open API methods.

```java
package com.flashline.sample.customaccesssettingsapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CustomAccesssettings {
    public static void main(String pArgs[]) throws java.rmi.RemoteException,
            OpenAPIException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(
                    pArgs[1], pArgs[2]);
            // Authentication complete

```
16.2 Use Cases

This section describes the use cases using the Custom Access Settings API. It contains the following topics:

- Section 16.2.1, "Use Case: Retrieve a List of Custom Access Setting Types"
- Section 16.2.2, "Use Case: Get Default Custom Access Setting Names"

16.2.1 Use Case: Retrieve a List of Custom Access Setting Types

Description
This method is used to retrieve the list of Custom Access Settings Types as available in Oracle Enterprise Repository.

Sample code is as follows:
1. String[] lRoleContextTypes = null;
2. lRoleContextTypes = repository.
   .customAccessSettingTypesGet(authToken);

Annotations
Line 2 - Retrieve an array of Custom Access Setting Names of type "asset".
16.2.2 Use Case: Get Default Custom Access Setting Names

**Description**
This method is used to retrieve the list of Default Custom Access Settings of a particular type. An asset default Custom Access Setting will be applied to all new assets, just as a file default Custom Access setting will be applied to all new files, and so on.

**Sample code is as follows:**
1. `String[] lCustomAccessSettingNames = null;`
2. `lCustomAccessSettingNames = mFlashlineRegistry.customAccessSettingDefaultNamesGet(mAuthToken, "asset");`

**Annotations**
Line 2 - Retrieve an array of default Custom Access Setting Names of type "asset".
This chapter provides an overview of Department API and describes the use cases using this API.

This chapter contains the following sections:

- Section 17.1, "Overview"
- Section 17.2, "Use Cases"

### 17.1 Overview

Departments can be created, read, queried for, and modified. These operations are described below. Bear in mind that once a Department is created, it cannot be deleted. Only two Department attributes are meaningful to a user: name and description.

**Additional Import(s) Required**

```java
import com.flashline.registry.openapi.entity.Department;
```

### 17.2 Use Cases

This section describes the use cases using the Department API. It contains the following topics:

- Section 17.2.1, "Use Case: Manipulate Departments"

### 17.2.1 Use Case: Manipulate Departments

**Description**

The following sample code illustrates typical tasks involving the manipulation of departments in Oracle Enterprise Repository. This includes creation, updating, querying, and deleting.

**Sample code is as follows:**

```java
package com.flashline.sample.departmentapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
```
import com.flashline.registry.openapi.entity.Department;
import com.flashline.registry.openapi.query.DepartmentCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class Departments {
    public static void main(String pArgs[]) throws java.rmi.RemoteException,
            OpenAPIException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                    pArgs[2]);
            // Create a new department
            Department dept = repository.departmentCreate(authToken,
                    "My Dept " + Calendar.getInstance().getTimeInMillis(), "A New Department");
            // Read a department
            // In order to read a Department you must have the Department name.
            Department dept2 = repository.departmentRead(authToken,
                    "ADepartment");
            // Query for a department
            // In order to query for a Department you must fill out a DepartmentCriteria object
            // with an array of SearchTerms. A SearchTerm is a key/value pair. Currently the only valid key is "name".
            DepartmentCriteria criteria = new DepartmentCriteria();
            criteria.setNameCriteria("DepartmentName");
            Department[] depts = repository.departmentQuery(authToken,
                    criteria);
            // Update a department
            // To update a Department you need only to modify a Department reference and call departmentUpdate...
            String lOldName = dept.getName();
            String lNewName = "New " + dept.getName();
            Department dept3 = repository.departmentRead(authToken, lOldName);
            dept3.setName(lNewName);
            repository.departmentUpdate(authToken, dept3);
catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message   = " + lEx.getMessage());
    System.out.println("StackTrace:" + lEx.printStackTrace());
}
})

}`
This chapter provides an overview of Extraction API and describes the use cases using this API.

This chapter contains the following sections:

- Section 18.1, "Overview"
- Section 18.2, "Use Cases"

### 18.1 Overview

As part of the Use - Download (extraction) process the user is asked to associate the selected asset with a particular project. These instances of usage, along with surveys (which are included in usage updates) are the primary drivers for metrics within Oracle Enterprise Repository.

---

**Note:** In earlier product releases the term Extraction was used to describe the act of downloading or otherwise accessing an asset's payload. The term Extraction has since been replaced by the phrase Use - Download. Please note, however, that within the context of this Extraction API document, most instances of use of the term Extraction (particularly in code examples) were left intact in order to simplify the use of REX API.

---

**Definitions**

- **State**
  
  State refers to the usage status of an asset that has been selected for use/download. There are four possible states:
  
  - IN PROCESS
  - ACCEPTED
  - REJECTED
  - DEPLOYED (DEPLOYED is covered under Projects).

- **Extraction Download**

  Contains the file info associated with the extracted asset. Values for an extraction download can be 0 or 1.

- **File Info**
Use Cases

Information and URL links to the actual files associated with the asset make up the File Info as contained in an extraction download. File Info values for an extraction download can be 0 to n.

- **Related Asset**
  
  Within Oracle Enterprise Repository, a given asset can be associated with others through a number of pre-defined and/or custom-configured relationships. An asset can contain 0 to n related assets.

**Related Subsystems**

- AssetSubsystem
- ProjectSubsystem
- CategorizationTypeSubsystem
- SurveySubsystem

18.2 Use Cases

This section describes the use cases using the Extraction API. It contains the following topics:

- Section 18.2.1, "Use Case: Extract an Asset"
- Section 18.2.2, "Use Case: Read an Extraction"
- Section 18.2.3, "Use Case: Update an Extraction"

18.2.1 Use Case: Extract an Asset

**Description**

An Extraction is created when an asset is associated for use in a project by the user. A list of related assets is also made available for extraction during this process. In this case the user can simultaneously extract both the primary asset and any related assets. A unique extraction is then recorded for each asset. Creating an extraction results in an array containing 0 to n extraction downloads. The file info value for each download can be 0 to n. The file info contains information about the file. This information can be used to create a link to the file.

In order to extract an asset the following conditions must be met:

- The user must be a member of the project to which the asset is to be extracted.
- The user must be assigned the appropriate role type(s).
- The project must be open.
- The asset(s) must be registered and active.
- If Custom Access Settings are enabled, the user performing the extraction must have appropriate access rights to the specified asset(s).
- If Custom Access Settings are enabled, the user performing the extraction will receive file info only for those files to which the user has the appropriate permissions.
- These conditions are checked by the appropriate methods in which they are used. Exceptions are thrown if the conditions are not met.
Sample code is as follows:

```java
package com.flashline.sample.extractionapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.ArrayList;
import java.util.Iterator;
import java.util.List;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.ExtractionDownload;
import com.flashline.registry.openapi.entity.FileInfo;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ExtractAsset {
    public static void main(String pArgs[]) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(
                    pArgs[1], pArgs[2]);
            long ASSET_ID_1 = 589;     // must be a valid asset id in OER
            long ASSET_ID_2 = 569;     // must be a valid asset id in OER
            long PROJECT_ID = 50000;   // must be a valid project id in OER
            long EXTRACTION_ID = 0;
            // Create a new extraction
            long[] lAssetIDs = { ASSET_ID_1, ASSET_ID_2 }; // must be a valid asset id in OER
            ExtractionDownload[] extractionDownloads = repository.extractionCreate(authToken, PROJECT_ID, lAssetIDs);
            System.out.println("Number of new extraction downloads created: " +
                    extractionDownloads.length);
            // Read an extraction by project and asset
            Extraction extraction = repository.extractionReadByProjectAndAsset(authToken, PROJECT_ID, ASSET_ID_1);
            EXTRACTION_ID = extraction.getID();
            // Read an extraction by ID
            Extraction extractionByID = repository.extractionRead(authToken, EXTRACTION_ID);
            System.out.println("The extraction "+extractionByID.getDisplayName()+" was read by id "+EXTRACTION_ID);
            // Read asset extractions
            Extraction[] assetExtractions =
        }
    }
}
```

repository.extractionReadAssetExtractions(authToken, PROJECT_ID, ASSET_ID_1, true);
System.out.println("The number of extractions for this asset is: "+(assetExtractions==null ? 0 : assetExtractions.length));
// ----------------------------------------
// Read project extractions
Extraction[] projectExtractions = repository.extractionReadProjectExtractions(authToken, PROJECT_ID, true);
System.out.println("The number of extractions for this project is: "+(projectExtractions==null ? 0 : projectExtractions.length));
// ----------------------------------------
// Read related assets
Asset[] relatedAssets = repository.extractionReadRelatedAssets(authToken, ASSET_ID_2);
System.out.println("The number of related assets is: "+relatedAssets==null ? 0 : relatedAssets.length);
// ----------------------------------------
// Read File-Info for an extraction
List fileInfosList = new ArrayList();
if (projectExtractions != null) {
    for (int i = 0; i < projectExtractions.length; i++) {
        extraction = repository.extractionRead(authToken, projectExtractions[i].getID());
        fileInfosList.add(repository.extractionReadFileInfos(authToken, extraction));
    }
}
// ----------------------------------------
// Get File
List fileInfoList = new ArrayList();
Iterator fileInfosListIter = fileInfosList.iterator();
while (fileInfosListIter.hasNext()) {
    FileInfo[] fileInfos = (FileInfo[]) fileInfosListIter.next();
    for (int i = 0; i < fileInfos.length; i++) {
        fileInfoList.add(fileInfos[i]);
    }
}
String[] fileLinks = new String[fileInfoList.size()];
for (int i = 0; i < fileInfoList.size(); i++) {
    FileInfo fileInfo = (FileInfo) fileInfoList.get(i);
    fileLinks[i] = repository.repositoryFileTranslator(authToken, fileInfo);
    System.out.println("Project extraction file-info link: "+fileLinks[i]);
}
// ----------------------------------------
// revert extractions
repository.extractionResetDatabase();
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = "+lEx.getServerErrorCode());
    System.out.println("Message    = "+lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
Notes about FileInfo Objects
FileInfo objects represent individual files associated with the extracted asset. The physical location of the file may be obtained by the two following methods.

1. Using the downloadURI property on the FileInfo object itself, i.e. fileInfo.getDownloadURI().
2. Using the OpenAPI method repositoryFileTranslator passing the FileInfo object, i.e. flashlineRegistry.repositoryFileTranslator(authToken, fileInfo).

---

**Note:** DO NOT use the URI property on the FileInfo object which represents an Oracle Enterprise Repository specific path.

---

18.2.2 Use Case: Read an Extraction

**Description**
Several methods beyond those covered in the Extract an Asset use case can be used to read extractions. Extractions can be grouped by asset, project, or user. The specific grouping of extractions determines the method to be used.

In order to read an extraction the following conditions must be met:

- The project must be open.
- The asset(s) must be registered and active.
- The extraction must be active.

These conditions are checked by the appropriate methods in which they are used. Exceptions are thrown if the conditions are not met.

**Sample code is as follows:**
```java
package com.flashline.sample.extractionapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ExtractRead {
    public static void main(String pArgs[]) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);
```
Use Cases

// Authenticate with OER
AuthToken authToken = repository.authTokenCreate(
    pArgs[1], pArgs[2]);
long PROJECT_ID = 50000; // must be a valid project id in the OER
long ASSET_ID = 569;    // must be a valid asset id in the OER

// Read project extractions
Extraction[] projectExtractions = repository
    .extractionReadProjectExtractions(authToken, PROJECT_ID, true);

// Read asset extractions
Extraction[] assetExtractions = repository
    .extractionReadAssetExtractions(authToken, PROJECT_ID, ASSET_ID, true);

// Read user extractions
Extraction[] userExtractions = repository
    .extractionReadUserExtractions(authToken, true);

// Read related assets
Asset[] assets = repository.extractionReadRelatedAssets(authToken,
   ASSET_ID);

// Exception handling
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message   = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
}

18.2.3 Use Case: Update an Extraction

Description
An extraction record is updated when the state of the asset is changed or when the consumer of the asset completes an asset survey. A state change or survey completion can be separate transactions or performed in tandem.

In order to update an extraction the following conditions must be met:

- The project must be open.
- The asset must be registered and active.
- The extraction must be active.
- The survey taken must be active.

These conditions are checked by the appropriate methods in which they are used. Exceptions are thrown if the conditions are not met.
Sample Code is as follows:

```java
package com.flashline.sample.extractionapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Answer;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Categorization;
import com.flashline.registry.openapi.entity.Choice;
import com.flashline.registry.openapi.entity.ChoiceList;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.ExtractionDownload;
import com.flashline.registry.openapi.entity.IExtraction;
import com.flashline.registry.openapi.entity.Question;
import com.flashline.registry.openapi.entity.SurveyTaken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class ExtractUpdate {
    public static void main(String[] pArgs) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL URL = null;
            URL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(URL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(
                pArgs[1], pArgs[2]);
            long PROJECT_ID = 50000; // must be a valid project id in the OER
            long ASSET_ID = 569; // must be a valid asset id in the OER
            // ----------------------------------------
            // Create a new extraction
            long[] lAssetIDs = { ASSET_ID };
            ExtractionDownload[] extractionDownloads = repository.extractionCreate(authToken, PROJECT_ID, lAssetIDs);
            Extraction[] assetExtractions = repository
                .extractionReadAssetExtractions(authToken, PROJECT_ID, ASSET_ID, true);
            // this assumes that there is at least 1 extraction and the first one will be used
            IExtraction iExtraction = repository
                .extractionReadExtractionStates(authToken);
            Extraction extraction = repository.extractionRead(authToken, assetExtractions[0].getID());
            // can set the status of the extraction to 'Deployed', 'Rejected', or 'In Process'.
            assetExtractions[0].setStatus("In Process");
            extraction = repository.extractionTentativelyAccept(authToken,
```

Use Cases
extraction);
SurveyTaken surveyTaken = repository.surveyTakenRead(authToken, extraction);
extraction = repository.extractionUpdateSurvey(authToken, extraction, surveyTaken);
extraction.setStatus(iExtraction.getInProcess());
surveyTaken = repository.surveyTakenRead(authToken, extraction);
extraction = repository.extractionUpdateSurvey(authToken, extraction, surveyTaken);
Categorization[] rejectionReasons = repository.
.extractionReadRejectionReasons(authToken);
surveyTaken = repository.surveyTakenRead(authToken, extraction);
extraction = repository.extractionUpdateSurvey(authToken, 
extraction, surveyTaken);
Question[] questions = repository.surveyReadQuestions(authToken);
ChoiceList choiceList = null;
Choice[] choices = null;
Answer[] answers = new Answer[4];
for (int i = 0; i < answers.length; i++) {
    answers[i] = new Answer();
}
answers[0].setQuestionId(questions[0].getId());
choiceList = questions[0].getChoiceList();
choices = choiceList.getChoices();
answers[0].setChoiceId(choices[0].getId());
answers[0].setValue(choices[0].getValue());
answers[1].setQuestionId(questions[1].getId());
answers[1].setChoiceId(0);
answers[1].setValue("100");
answers[2].setQuestionId(questions[2].getId());
answers[2].setChoiceId(0);
answers[2].setValue("200");
answers[3].setQuestionId(questions[3].getId());
choiceList = questions[3].getChoiceList();
choices = choiceList.getChoices();
answers[3].setChoiceId(choices[3].getId());
answers[3].setValue(choices[3].getValue());
surveyTaken.setAnswers(answers);
surveyTaken = repository.surveyTakenUpdate(authToken, surveyTaken);
// -----------------------------------
// revert extractions
repository.extractionResetDatabase();
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message    = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
Use Cases

Pitfalls

Bear in mind that a state change or a survey taken is a two-step process. The first step is to change the state or take the survey. The second step is to update the extraction status using the extractionUpdateStatus method. A state change or survey taken can be separate transactions or performed in tandem. If performed in tandem only a single extractionUpdateStatus method call is required.

The extractionUpdateStatus method requires a SurveyTaken. This is true regardless of whether a survey was taken at the time the extractionUpdateStatus method is called (as in a state change, for example). This survey is retrieved using the surveyTakenRead method. If a survey has not been taken for this extraction one will be created by the surveyTakenRead method.

The current survey in Oracle Enterprise Repository consists of four questions. When a survey is taken an array is created storing answers for the four questions. Each answer must contain three pieces of information in order to be valid:

- The value (the user response to the question)
- The question ID
- The choice ID

Questions 2 and 3 are single answer questions, so the choice ID here will always be set to 0. Questions 1 and 4, however, are multiple-choice. The multiple choices are retrieved using the surveyReadChoiceList method.

Methods to Avoid:
The following objects are used in the Extraction and Survey subsystems:

- Extraction
- ExtractionDownload
- FileInfo
- SurveyTaken
- Question
- ChoiceList
- Choice
- Answer

The use of any of the get methods within these objects is acceptable. All the remaining methods - especially the set methods - should be avoided. The events provided by these remaining methods are covered by the methods in the Extraction and Survey subsystems.
Localization of REX Clients

This chapter provides an overview about localization of REX clients and describes the use cases for localization.

This chapter contains the following sections:

- Section 19.1, "Overview"
- Section 19.2, "Use Cases"

19.1 Overview

Statuses are passed back to a REX client as either an OpenAPIException or AuditMsg object. OpenAPIException objects are used for exceptions, whereas, AuditMsg objects are used for processes that run asynchronously. Both of these objects return a text error message to the REX client.

The interface of both objects has been expanded to include an error code and a list of message arguments so that REX clients can display error or status messages in another language. Clients can continue to use the standard error messages or they can ignore the message and use the error code and the message arguments to construct their own error message.

For example, if you want to localize an application that uses REX, you would first get the properties file listing all the possible error messages. The messages look something like this:

ERR_9008 = Error updating project with ID = \{0\}.

Then you must translate all the messages as necessary:

ERR_9008 = Error updating project with ID = \{0\}.

If the client code tries to modify a project with ID=123, and that modification fails, then your end-users will get an exception with this error message:

Error updating project with ID = [123].

If you want to display that error in a local language (such as, Pig Latin), you would take the error code, 9008, and look it up in your translated file to get the string "Errorway updatingay ojectpray ithway IDwayay = \{0\}". Then you would use the message arguments to replace the tokens. In this case, there is only one string, "123", so you should be able to find one message argument.

You can then construct a custom error message for your end-users:

Errorway updatingay ojectpray ithway IDwayay = [123].
19.2 Use Cases

This section describes the use cases for localization of REX clients. It contains the following topics:

- Section 19.2.1, "Use Case: Creating localized messages from REX Exceptions"
- Section 19.2.2, "Use Case: Creating localized messages from REX Audit Messages"

19.2.1 Use Case: Creating localized messages from REX Exceptions

Description

- From the OpenAPIException get the server error code and the message arguments
- Get the resource bundle for the OpenAPIExceptions appropriate for the client locale
- Get the string associated with the error code and replace the token with the message arguments

OpenAPIException Sample code is as follows:

```java
package com.flashline.sample.localization;
import java.net.URL;
import java.text.MessageFormat;
import java.util.ResourceBundle;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class SyncTest {
    private static final int INVALID_PROJECT_ID = 8672609;
    public static void main(String[] args) throws Exception {
        URL lURL = new URL("http://localhost:9080/registry/services/FlashlineRegistry");
        FlashlineRegistry reg = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
        AuthToken token = reg.authTokenCreate("admin", "n0pa55w0rd");
        try {
            Project project = reg.projectRead(token, INVALID_PROJECT_ID);
        } catch (OpenAPIException ex) {
            String msg =
                    createMessage(ex.getServerErrorCode(), ex.getMessageArguments());
            System.out.println(msg);
        }
    }
    private static String createMessage(int pServerErrorCode, Object[] pArgs) {
        ResourceBundle mResourceBundle = ResourceBundle.getBundle("com.flashline.sample.localization.sync_error_messages");
        return MessageFormat.format(mResourceBundle.getString("ERR _" + pServerErrorCode), pArgs);
    }
}
```
19.2.2 Use Case: Creating localized messages from REX Audit Messages

Description
- From the AuditMsg and the ImpExpJob get the server error code and the message arguments from the AuditMsg
- Get the resource bundle for audit messages appropriate for the client locale
- Get the string associated with the error code and replace the token with the message arguments

AuditMsg Sample Code is as follows:

```java
package com.flashline.sample.localization;
import java.io.File;
import java.io.FileInputStream;
import java.io.FileNotFoundException;
import java.io.IOException;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.text.MessageFormat;
import java.util.ResourceBundle;
import javax.activation.DataHandler;
import javax.xml.rpc.ServiceException;
import org.apache.axis.client.Stub;
import org.apache.soap.util.mime.ByteArrayDataSource;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.ImpExpJob;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class AsyncTest {
    public void run() throws MalformedURLException, ServiceException,
    OpenAPIException, RemoteException{
        URL lURL = new URL("http://localhost:9080/registry/services/FlashlineRegistry");
        FlashlineRegistry reg = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
        AuthToken token = reg.authTokenCreate("admin", "n0pa55w0rd");
        try {
            File lFile = new File("samples/com/flashline/sample/localization/asynctest.zip");
            //Import the file and save to db
            InputStream lIS = new FileInputStream(lFile);
            ByteArrayOutputStream lDataSource = new ByteArrayOutputStream(lIS,
            "application/x-zip-compressed");
            DataHandler lDH = new DataHandler(lDataSource);
            // add the attachment
            ((Stub)reg).addAttachment(lDH);
            ImpExpJob lJob = reg.importExecute(token, "flashline", null, "Import Assets Test", null);
            boolean lPassed = false;
            for(int i=0; i<1000; i++){
                lJob = reg.importStatus(token, lJob);
                System.out.println("Import Job ["+lJob.getID()+"] - State:
                *"+lJob.getState());
        }
    }
}
```

Localization of REX Clients  19-3
String msg = createMessage(lJob.getAuditMsg().getSummaryID(), lJob.getAuditMsg().getSummaryArgs());
System.out.println(msg);
if (lJob.getState().equals("completed")) {
    lPassed = true;
    break;
}
try {
    Thread.sleep(1000);
} catch (InterruptedException e) {
    e.printStackTrace();
}
if (lPassed) {
    System.out.println("Import Completed");
}
} catch (OpenAPIException ex) {
    String msg = createMessage(ex.getServerErrorCode(), ex.getMessageArguments());
    System.out.println(msg);
} catch (FileNotFoundException e) {
    // TODO Auto-generated catch block
    e.printStackTrace();
} catch (IOException e) {
    // TODO Auto-generated catch block
    e.printStackTrace();
}
/**
 * @param args
 * @throws ServiceException
 * @throws RemoteException
 * @throws MalformedURLException
 * @throws OpenAPIException
 */
public static void main(String[] args) throws OpenAPIException, MalformedURLException, RemoteException, ServiceException {
    AsyncTest test = new AsyncTest();
    test.run();
}
private static String createMessage(int pServerErrorCode, Object[] pArgs) {
    ResourceBundle mResourceBundle = ResourceBundle.getBundle("com.flashline.sample.localization.async_error_messages");
    return MessageFormat.format(mResourceBundle.getString("ERR_{pServerErrorCode}_{pArgs}"), pArgs);
}
private String readZip(String pFileName) throws IOException {
    int lNumRead = 0;
    char[] lBuf = new char[2048];
    StringBuffer lQuery = new StringBuffer();
    InputStreamReader lReader = new InputStreamReader(getClass().getResourceAsStream(pFileName));
    while( (lNumRead=lReader.read(lBuf)) != -1) {
        lQuery.append(lBuf, 0, lNumRead);
    }
    return lQuery.toString();
}
This chapter provides an overview of Notification API and describes the use cases using this API.

This chapter contains the following sections:

- Section 20.1, "Overview"
- Section 20.2, "Use Cases"

### 20.1 Overview

The Notification Subsystem provides a Web Services-based mechanism that can be used to create Oracle Enterprise Repository notifications.

### 20.2 Use Cases

This section describes the use cases using the Notification API. It contains the following topics:

- Section 20.2.1, "Use Case: Read Notification Substitution List"
- Section 20.2.2, "Use Case: Create a Notification"

#### 20.2.1 Use Case: Read Notification Substitution List

**Description**

To create a new read notification substitution list.

**Sample code is as follows:**

#### 20.2.2 Use Case: Create a Notification

**Description**

Create a Oracle Enterprise Repository notification.

**Sample code is as follows:**

```java
package com.flashline.sample.artifactstoreapi;
import java.net.URL;
import java.rmi.RemoteException;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
```
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.ArtifactStoreBean;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.ArtifactStoreCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class ArtifactStores {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);

            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);

            ArtifactStoreCriteria lArtifactStoreCriteria = new ArtifactStoreCriteria();
lArtifactStoreCriteria.setHostCriteria("existing-artifact-store.com");
lArtifactStoreCriteria.setBasepathCriteria("/");
lArtifactStoreBeans = repository.artifactStoreQuery(authToken, lArtifactStoreCriteria, false);

            // create a missing artifact store if missing and based on the criteria
            lArtifactStoreCriteria = new ArtifactStoreCriteria();
lArtifactStoreCriteria.setHostCriteria("missing-artifact-store.com");
lArtifactStoreCriteria.setBasepathCriteria("/");
            // a new artifact store will be created
            lArtifactStoreBeans = repository.artifactStoreQuery(authToken, lArtifactStoreCriteria, true);
            lArtifactStoreBean = lArtifactStoreBeans[0];
        } catch (Exception e) {
            throw new RuntimeException(e.getMessage());
        }
    }
}
This chapter provides an overview of Policy API and describes the use cases using this API.

This chapter contains the following sections:
- Section 21.1, "Overview"
- Section 21.2, "Use Cases"

## 21.1 Overview

REX now supports the following functions against Policies:
- **Query Policy:**
  - Status of the Policy (pass/fail) on an Asset
  - Status of the collection of Policies on an Asset
  - Obtain XML from the Policy Assertion Technical Description Field
  - Assets that the Policy is applied too
- **Viewer**
  - Maintain list of individual Policy Assertions on a Policy
  - Set status of individual Policy Assertions for an Asset.
  - Apply and remove Policy from assets

### Additional Import(s) Required (Some may not be used in all examples.)

```java
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.PolicyAssertion;
import com.flashline.registry.openapi.entity.PolicyAssertionResult;
```

### Note:
- Policies in Oracle Enterprise Repository are a specific type of asset, based on the Policy Type. Refer to the Asset API use cases for information related to the creation, modification and removal of a Policy.

### Definitions
- **Assertions**
An assertion is a policy statement added to a policy asset.

- **AssertionResult**

When a Policy has been applied to an asset, each assertion within the policy can be evaluated for the asset. The Assertion Result is pass, fail or unknown for any asset and assertion pair.

**Methods**

There are four new methods available with the FlashlineRegistry service

- assetReadAppliedPolicies()
- assetUpdateAppliedPolicies()
- assetEvaluateAgainstPolicy()
- assetEvaluateAgainstAllPolicies()

### 21.2 Use Cases

This section describes the use cases using the Policy API. It contains the following topics:

- Section 21.2.1, "Use Case: Create a Policy"
- Section 21.2.2, "Use Case: Get All Policies"
- Section 21.2.3, "Use Case: Get/Set Policy Assertions"
- Section 21.2.4, "Use Case: Get Policies That Have Been Applied To An Asset"
- Section 21.2.5, "Use Case: Set Which Policies Are Applied To An Asset"
- Section 21.2.6, "Use Case: Evaluate Asset Compliance"

#### 21.2.1 Use Case: Create a Policy

**Description**

To create a new policy, create a new asset based on the Policy Type (102).

**Sample code is as follows:**

```java
package com.flashline.sample.policies;
import java.net.URL;
import java.rmi.RemoteException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AssetType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.PolicyAssertion;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class CreatePolicySample {
    private static final String POLICY_TYPE_NAME_PREFIX = "Policies-Test Policy Type";
    private static final long ASSET_POLICY_ARCHETYPE = 102;
    private static final String POLICY_NAME_PREFIX = "Policies-Test Policy";
    private static final String POLICY_VERSION = "1.0";
    private static final FlashlineRegistry mRepository = null;
    private static final AssetType mPolicyAssetType = null;
    private static final AuthToken mAuthToken = null;
```
public CreatePolicySample(String[] pArgs) {
    try {
        // Connect to Oracle Enterprise Repository
        URL lURL = null;
        lURL = new URL(pArgs[0]);
        mRepository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
        // Authenticate with OER
        mAuthToken  = mRepository.authTokenCreate(pArgs[1], pArgs[2]);
        mPolicyAssetType = createPolicyAssetType();
    } catch(Exception e) {
    }
}

class CreatePolicySample {
    public static void main(String[] pArgs) {
        try {
            CreatePolicySample lCreatePolicySample = new CreatePolicySample(pArgs);
            Asset lPolicy = lCreatePolicySample.createPolicy();
        } catch(Exception e) {
            e.printStackTrace();
        }
    }

    /**
     * Creates an asset policy with a unique name
     * 
     * @return Array of policy assertions
     */
    private Asset createPolicy() throws RemoteException {
        String lPolicyName = POLICY_NAME_PREFIX + " " + System.currentTimeMillis();
        // create a policy (an asset whose assettype's archtype is "102" (policy)
        Asset lPolicy = mRepository.assetCreate(mAuthToken, lPolicyName, POLICY _VERSION, mPolicyAssetType.getID());
        lPolicy.setCustomData("<custom-data></custom-data>");
        // set some policy assertions
        lPolicy.setPolicyAssertions(generateSampleAssertions());
        return mRepository.assetUpdate(mAuthToken, lPolicy);
    }

    /**
     * Returns several sample policy assertions for use in testing.
     * Located in a function to be shared between test calls.
     *  
     * @return Array of policy assertions
     */
    private PolicyAssertion[] generateSampleAssertions() {
        PolicyAssertion[] lPolicyAssertions = new PolicyAssertion[3];
        String[] lPolicyAssertionNames = {"First", "Second", "Third"};
        for (int i = 0; i < lPolicyAssertionNames.length; i++) {
            String lPolicyAssertionName = "My " + lPolicyAssertionNames[i] + " Assertion";
            lPolicy Assertions[i] = new PolicyAssertion();
            lPolicyAssertions[i].setName(lPolicyAssertionName);
            lPolicyAssertions[i].setDescription(lPolicyAssertionName + " Description");
            lPolicyAssertions[i].setTechnicalDefinition(lPolicyAssertionName + " Technical Definition");
        }
    }
}
21.2.2 Use Case: Get All Policies

Description
To get all policies, find all assets whose assetype’s archetype is a policy archetype (102).

Sample code is as follows:
```java
package com.flashline.sample.policies;
import java.net.URL;
import java.util.Arrays;
import java.util.LinkedList;
import java.util.List;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AssetType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.query.AssetTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class FindPoliciesSample {
    private static FlashlineRegistry mRepository = null;
    private static AuthToken mAuthToken = null;
    public FindPoliciesSample(String[] pArgs) {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = new URL(pArgs[0]);
            mRepository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
            mAuthToken = mRepository.authTokenCreate(pArgs[1], pArgs[2]);
```

public static void main(String[] pArgs) {
    try {
        FindPoliciesSample lFindPoliciesSample = new FindPoliciesSample(pArgs);
        AssetType[] lPolicyAssetTypes = null;
        Asset[] lPolicies = null;
        AssetTypeCriteria lAssetTypeCriteria = null;
        AssetCriteria lAssetCriteria = null;
        List lListPolicies = new LinkedList();
        // -----------------------
        // search for all asset types that have the policy (102) archetype
        lAssetTypeCriteria = new AssetTypeCriteria();
        lPolicyAssetTypes = mRepository.assetTypeQuery(mAuthToken, lAssetTypeCriteria);
        for(int i=0; i<lPolicyAssetTypes.length; i++) {
            // -----------------------
            // for each policy assettype, search for all assets that are of policy assettype
            lAssetCriteria = new AssetCriteria();
            lAssetCriteria.setAssetTypeCriteria(lPolicyAssetTypes[i].getID());
            lPolicies = mRepository.assetQuery(mAuthToken, lAssetCriteria);
            // -----------------------
            // add policies to list
            lListPolicies.addAll(Arrays.asList(lPolicies));
        }
    }

    } catch(Exception e) {
        e.printStackTrace();
    }
}

21.2.3 Use Case: Get/Set Policy Assertions

Description
To get policy assertions, call getPolicyAssertions. To set policy assertions, call setPolicyAssertions, then update the policy.

Sample Code is as follows:
package com.flashline.sample.policies;
import java.net.URL;
import java.util.Arrays;
import java.util.LinkedList;
import java.util.List;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AssetType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.PolicyAssertion;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.query.AssetTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class GetSetPolicyAssertionsSample {
    private static FlashlineRegistry mRepository = null;
    private static AuthToken mAuthToken = null;
public GetSetPolicyAssertionsSample(String[] pArgs) {
    try {
        // Connect to Oracle Enterprise Repository
        URL lURL = null;
        lURL = new URL(pArgs[0]);
        mRepository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
        // Authenticate with OER
        mAuthToken = mRepository.authTokenCreate(pArgs[1], pArgs[2]);
    } catch(Exception e) {
    }
}

public static void main(String[] pArgs) {
    try {
        GetSetPolicyAssertionsSample lGetSetPolicyAssertionsSample = new GetSetPolicyAssertionsSample(pArgs);
        AssetType[] lPolicyAssetTypes = null;
        Asset[] lPolicies = null;
        AssetTypeCriteria lAssetTypeCriteria = null;
        AssetCriteria lAssetCriteria = null;
        List lListPolicies = new LinkedList();
        // -----------------------
        // search for all asset types that have the policy (102) archetype
        lAssetTypeCriteria = new AssetTypeCriteria();
        lAssetTypeCriteria.setArcheTypeCriteria("102");
        lPolicyAssetTypes = mRepository.assetTypeQuery(mAuthToken, lAssetTypeCriteria);
        for(int i=0; i<lPolicyAssetTypes.length; i++) {
            // -----------------------
            // for each policy assettype, search for all assets that are of policy assettype
            lAssetCriteria = new AssetCriteria();
            lAssetCriteria.setAssetTypeCriteria(lPolicyAssetTypes[i].getID());
            lPolicies = mRepository.assetQuery(mAuthToken, lAssetCriteria);
            // -----------------------
            // add policies to list
            lListPolicies.addAll(Arrays.asList(lPolicies));
        }
        if(lListPolicies.size() > 0) {
            // -----------------------
            // get the first policy
            Asset lPolicy = (Asset)lListPolicies.get(0);
            // -----------------------
            // get the policy assertions
            PolicyAssertion[] lPolicyAssetions = lPolicy.getPolicyAssertions();
            // -----------------------
            // print out the policy assertions
            for(int i=0; i<lPolicyAssetions.length; i++) {
                lPolicyAssetions[i].toString();
            }
            // -----------------------
            // set different policy assertions
            lPolicy.setPolicyAssertions(generateNewAssertions());
            // -----------------------
            // update the asset with new assertions
            mRepository.assetUpdate(mAuthToken, lPolicy);
        }
    } catch(Exception e) {
    }
}
21.2.4 Use Case: Get Policies That Have Been Applied To An Asset

Description
Call assetReadAppliedPolicies to obtain policies applied to an asset.

Sample Code is as follows:
package com.flashline.sample.policies;
import java.net.URL;
import java.util.Arrays;
import java.util.LinkedList;
import java.util.List;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AssetType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.query.AssetTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class GetAppliedPoliciesSample {
    private static FlashlineRegistry mRepository = null;
    private static AuthToken mAuthToken = null;
    public GetAppliedPoliciesSample(String[] pArgs) {
        try {
/* Connect to Oracle Enterprise Repository */
            // Connect to Oracle Enterprise Repository
*/
            } catch (Exception e) {
                e.printStackTrace();
            }
    }
}
21.2.5 Use Case: Set Which Policies Are Applied To An Asset

Description
Call assetUpdateAppliedPolicies to update policies that have been applied to an asset.

Sample Code is as follows:
package com.flashline.sample.policies;
import java.net.URL;
import java.util.Arrays;
import java.util.LinkedList;
import java.util.List;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AssetType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.PolicyAssertion;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.query.AssetTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ApplyPoliciesSample {
    private static FlashlineRegistry mRepository = null;
    private static AuthToken mAuthToken = null;
    public ApplyPoliciesSample(String pArgs[]) {
        try {
            // Connect to Oracle Enterprise Repository
            URL 1URL = null;
            1URL = new URL(pArgs[0]);
            mRepository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(1URL);
            // Authenticate with OER
            mAuthToken = mRepository.authTokenCreate(pArgs[1], pArgs[2]);
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
    public static void main(String[] pArgs) {
        try {
            GetAppliedPoliciesSample lGetAppliedPoliciesSample = new GetAppliedPoliciesSample(pArgs);
            long lAssetId = 50000;
            // read the policed applied to asset 50000
            Asset[] lAppliedPolicies = mRepository.assetReadAppliedPolicies(mAuthToken, lAssetId);
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
Use Cases

21.2.6 Use Case: Evaluate Asset Compliance

Description
Use `assetEvaluateAgainstPolicy` to determine an asset's compliance with a specified policy. Use `assetEvaluateAgainstAllPolicies` to determine an asset's compliance against all applied policies.

Sample Code is as follows:
```java
package com.flashline.sample.policies;
import java.net.URL;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class PolicyEvaluationSample {
    private static FlashlineRegistry mRepository = null;
    private static AuthToken mAuthToken = null;
    public PolicyEvaluationSample(String[] pArgs) {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            mRepository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
            mAuthToken = mRepository.authTokenCreate(pArgs[1], pArgs[2]);
        } catch(Exception e) {
            e.printStackTrace();
        }
    }
    public static void main(String[] pArgs) {
        try {
            PolicyEvaluationSample lPolicyEvalSamp = new PolicyEvaluationSample(pArgs);
            long lAssetId = 50000;
            long[] lPolicyIds = {50000, 50001, 50002};
            mRepository.assetUpdateAppliedPolicies(mAuthToken, lAssetId, lPolicyIds);
        } catch(Exception e) {
            e.printStackTrace();
        }
    }
}
```
long lAssetId = 50000;
long lPolicyId = 50001;
String lEvaluationResult = null;
// ---------------------
// evaluate asset id 50000 against policy id 50001
// the return will be one of the following values "pass", "fail", "unknown"
lEvaluationResult = mRepository.assetEvaluateAgainstPolicy(mAuthToken, lAssetId, lPolicyId);
// ---------------------
// evaluate asset id 50000 against all polices applied to the asset
// the return will be one of the following values "pass", "fail", "unknown"
lEvaluationResult = mRepository.assetEvaluateAgainstAllPolicies(mAuthToken, lAssetId);
} catch(Exception e) {
e.printStackTrace();
}
}
This chapter provides an overview of Projects API and describes the use cases using this API. 

This chapter contains the following sections:

- Section 22.1, "Overview"
- Section 22.2, "Use Cases"

22.1 Overview

This section covers projects, providing information covering create, read, update, query, and validate. Several entities are attached to Projects: related projects, users, consumed assets, and produced assets. The addition and removal of these entities is also covered in this section.

Additional Import(s) Required (Some may not be used in all examples.)

```java
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.query.ProjectCriteria;
import com.flashline.registry.openapi.entity.KeyValuePair;
import com.flashline.registry.openapi.entity.Results;
import java.text.SimpleDateFormat;
import com.flashline.registry.openapi.decision.ExtractionReassignmentDecision;
import com.flashline.registry.openapi.entity.ProjectEntities;
```

22.2 Use Cases

This section describes the use cases using the Projects API. It contains the following topics:

- Section 22.2.1, "Use Case: Create a New Project"
- Section 22.2.2, "Use Case: Read a Project"
- Section 22.2.3, "Use Case: Validate a Project"
- Section 22.2.4, "Use Case: Update a Project"
- Section 22.2.5, "Use Case: Update a Project's Produced Assets"
- Section 22.2.6, "Use Case: Remove Produced Assets from a Project"
- Section 22.2.7, "Use Case: Update a Project's Asset Usage"
- Section 22.2.8, "Use Case: Closing a Project with Hidden Assets"
22.2.1 Use Case: Create a New Project

Description
This method creates a project, assigns users, and assigns related projects.

Rules for projects:

- The project must have an assigned project leader.
- A project's name must be unique and cannot be null.
- A project must be assigned to a department.
- A project's estimated hours must be a whole number, 0 or greater.

Sample code is as follows:
```java
package com.flashline.sample.projectapi;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CreateNewProject {
    public static void main(String pArgs[]) throws OpenAPIException,
        RemoteException,
        ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                pArgs[2]);
            Project lProject = null;
            ProjectEntities lProjectEntities = null;
            String[] lLeaderIds = null;
            //
            lProject = new Project();
lProjectEntities = new ProjectEntities();
```
### 22.2.2 Use Case: Read a Project

**Description**
Searches for a project and reads its extractions, produced assets, users, and related projects.

**Sample code is as follows:**

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.query.ProjectCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ReadProject {
    public static void main(String[] pArgs) throws OpenAPIException, RemoteException {
        try {
            System.out.println("\t --- ServerCode = " + oapie.getServerErrorCode());
            System.out.println("\t --- Message    = " + oapie.getMessage());
        } catch (Exception e) {
            System.out.println("\t --- ErrorMessage = " + e.getMessage());
        }
    }
}
```
// Connect to Oracle Enterprise Repository
<<<<<<<<<<<
URL lURL = null;
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
   .getFlashlineRegistry(lURL);
<<<<<<<<<<<
// Authenticate with OER
<<<<<<<<<<<
AuthToken authToken = repository.authTokenCreate(pArgs[1],
pArgs[2]);
<<<<<<<<<<<
// Read a project
ProjectCriteria projectCriteria = new ProjectCriteria();
projectCriteria.setNameCriteria("Project A");
Project[] projects = repository.projectQuery(authToken,
   projectCriteria);
if (projects.length > 0) {
   try {
      Project projectRead = (Project) projects[0];
      Extraction[] lExtractions = repository.projectReadExtractions(
         authToken, projectRead);
      Asset[] lAssets = repository.projectReadProducedAssets(
         authToken, projectRead);
      Project[] childProjects = repository.projectReadChildProjects(
         authToken, projectRead);
      Project[] parentProjects = repository
         .projectReadParentProjects(authToken, projectRead);
      RegistryUser[] members = repository.projectReadMembers(
         authToken, projectRead);
      RegistryUser[] leaders = repository.projectReadLeaders(
         authToken, projectRead);
   } catch (OpenAPIException ex) {
      ex.printStackTrace();
   }
   catch (OpenAPIException lEx) {
      System.out.println('ServerCode = ' + lEx.getServerErrorCode());
      System.out.println('Message    = ' + lEx.getMessage());
      System.out.println('StackTrace:');
      lEx.printStackTrace();
   } catch (RemoteException lEx) {
      lEx.printStackTrace();
   } catch (ServiceException lEx) {
      lEx.printStackTrace();
   } catch (MalformedURLException lEx) {
      lEx.printStackTrace();
   }
}

22.2.3 Use Case: Validate a Project

Description
Validating a project allows the user to catch any validation errors before a project save
is attempted.
Sample Code is as follows:

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Department;
import com.flashline.registry.openapi.entity.KeyValuePair;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.Results;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ValidateProject {
    public static void main(String pArgs[]) throws OpenAPIException,
        RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                pArgs[2]);
            Project lProject = new Project();
            Results lResults = new Results();
            String[] lLeaders = { "100" }; // Department Name'
            Department department = repository.departmentRead(authToken, "DEPARTMENT_NAME");
            ProjectEntities lProjectEntities = new ProjectEntities();
            // set the project data
            lProjectEntities.setLeaderIDs(lLeaders);
            lProject.setName("Project Name");
            lProject.setDepartmentName("DEPARTMENT_NAME");
            // Validate a project
            lResults = repository.projectValidate(authToken, lProject,
                lProjectEntities);
            KeyValuePair[] lPairs = lResults.getErrors();
            for (int i = 0; i < lPairs.length; i++) {
                KeyValuePair lPair = lPairs[i];
                System.out.println(lPair.getValue());
            }
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message = " + lEx.getMessage());
            System.out.println("StackTrace:");
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            lEx.printStackTrace();
        } catch (ServiceException lEx) {
```
22.2.4 Use Case: Update a Project

Description
Update the information and data associated with a specific project.

Sample Code is as follows:

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.text.SimpleDateFormat;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Department;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateProject {
    public static void main(String[] pArgs) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            Project lProject = new Project();
            Department department = new Department();
            ProjectEntities lProjectEntities = new ProjectEntities();
            // creating a new temporary project for sample
            Project lSampleProject = createProject(repository, authToken);
            // read an existing project
            try {
                lProject = repository.projectRead(authToken, lSampleProject.getID());
            } catch (OpenAPIException ex) {
                throw ex;
            }
        }
    }
}
```
// -----------------------------------
// change project data
lProject.setName("Update "+lProject.getName());
lProject.setDescription("Updated Description");
try {
    department = repository.departmentRead(authToken,
        "Different Department");
    if (department==null) {
        System.out.println("dept is null");
        department = repository.departmentCreate(authToken, "Different

Department", "Different Department description...");
    }
} catch (OpenAPIException ex) {
    throw ex;
}

lProject.setDepartmentID(department.getID());
lProject.setAddByDefault(true);
lProject.setEstimatedHours(50);
java.util.Calendar lCal = new java.util.GregorianCalendar();
SimpleDateFormat sdf = new SimpleDateFormat("M/d/yy");
lCal.setTime(sdf.parse("1/1/04"));
lProject.setStartDate(lCal);
// -----------------------------------
// Update the project
lProject = (Project) repository.projectUpdate(authToken,
    lProject, lProjectEntities);
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message    = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
} catch (Exception e) {
    
}

protected static Project createProject(FlashlineRegistry repository, AuthToken
    authToken) throws OpenAPIException, RemoteException {
    Project lProject = new Project();
    ProjectEntities lProjectEntities = new ProjectEntities();
    lProject.setName("Project "+Calendar.getInstance().getTimeInMillis());
    lProject.setDepartmentID(50000); // a department with id 50000 must
    String[] lLeaderIds = new String[] { "99" };
    lProjectEntities.setLeaderIDs(lLeaderIds);
    lProject = repository.projectCreate(authToken, lProject, lProjectEntities);
    return lProject;
}
22.2.5 Use Case: Update a Project's Produced Assets

**Description**

Allows the user perform a single database transaction to set the produced assets of a project.

**Sample Code is as follows:**

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.APIValidationException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateProjectProducedAssets {
    public static void main(String pArgs[]) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                    pArgs[2]);
            ProjectEntities lProjectEntities = new ProjectEntities();
            Asset lSampleAsset1 = createAsset(repository, authToken);
            Asset lSampleAsset2 = createAsset(repository, authToken);
            String[] assetIds = { lSampleAsset1.getID(), lSampleAsset2.getID() };
            try {
                // -----------------------------------
                // read an existing project
                Project projectRead = repository.projectRead(authToken, 50000);
                // -----------------------------------
                // set the produced asset ids
                lProjectEntities.setAssetIDs(assetIds);
                // -----------------------------------
                // update the project
                repository.projectUpdate(authToken, projectRead,
                        lProjectEntities);
            } catch (APIValidationException ex) {
                ex.printStackTrace();
            }
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
        }
    }
}
```

---

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22.2.6 Use Case: Remove Produced Assets from a Project

**Description**
Remove produced assets from a project.

**Sample Code is as follows:**
```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.APIValidationException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class RemoveProducedAssetsFromProject {
    public static void main(String[] pArgs) throws OpenAPIException, RemoteException,
      ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            ProjectEntities lProjectEntities = new ProjectEntities();
```

String[] assetIds = { "569", "589" }; try {
    // -----------------------------------
    // read an existing project
    Project projectRead = repository.projectRead(authToken, 50000);
    // -----------------------------------
    // set the remove assets ids
    lProjectEntities.setRemovedAssetIDs(assetIds);
    // -----------------------------------
    // update the project
    repository.projectUpdate(authToken, projectRead, lProjectEntities);
} catch (APIValidationException ex) {
    ex.printStackTrace();
}

// -----------------------------------
// revert extractions
repository.extractionResetDatabase();
} catch (OpenAPIException lEx) {
    System.out.println('ServerCode = ' + lEx.getServerErrorCode());
    System.out.println('Message = ' + lEx.getMessage());
    lEx.printStackTrace();
}

As an alternative, produced assets may be removed by specifying the assets that are to remain on the project.

Sample Code:

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class RemoveProducedAssetsFromProject2 {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
```
// /////////////////////////////////////////////////////////
AuthToken authToken = repository.authTokenCreate(pArgs[1],
pArgs[2]);
// -----------------------------------
// An alternate way of removing produced assets is to specify which assets
// you wish to remain on the project.
String[] assetIDs = { "569" };
ProjectEntities lEntities = new ProjectEntities();
Project projectRead = new Project();
try {
  // -----------------------------------
  // read an existing project
  projectRead = repository.projectRead(authToken, 50000);
  // -----------------------------------
  // set the entities of the produced assets
  lEntities.setAssetIDs(assetIDs);
  // -----------------------------------
  // update the project
  repository.projectUpdate(authToken, projectRead, lEntities);
} catch (OpenAPIException ex) {
  ex.printStackTrace();
}

// -----------------------------------
// revert extractions
repository.extractionResetDatabase();
catch (OpenAPIException lEx) {
  System.out.println("ServerCode = " + lEx.getServerErrorCode());
  System.out.println("Message    = " + lEx.getMessage());
  System.out.println("StackTrace:" + lEx.printStackTrace());
} catch (RemoteException lEx) {
  lEx.printStackTrace();
} catch (ServiceException lEx) {
  lEx.printStackTrace();
} catch (MalformedURLException lEx) {
  lEx.printStackTrace();
}

22.2.7 Use Case: Update a Project’s Asset Usage

Description
Allows the user to reject extractions that are associated with a project.

Sample Code is as follows:
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.List;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectAsset;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class UpdateProjectExtractions {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // Update a project's extractions
            ProjectEntities lProjectEntities = null;
            try {
                // read an existing project
                Project projectRead = repository.projectRead(authToken, 50000);
                // get an extraction or create one
                long lExtractionID = 0;
lProjectAssets = projectRead.getAssets();
                if (lProjectAssets != null && lProjectAssets.length > 0) {
lProjectAssets[0].getStatus();
lExtractionID = lProjectAssets[0].getID();
                } else {
lProjectEntities = new ProjectEntities();
lExtractionID = repository.assetRead(authToken, 569).getID();
String[] lAssetIDs = {""+lExtractionID };
lProjectEntities.setAssetIDs(lAssetIDs);
repository.projectUpdate(authToken, projectRead, lProjectEntities);
            } // set the rejected assets ids
            String[] rejectedIds = null;
            projectRead = repository.projectRead(authToken, 50000); // reload modified project
            Extraction[] lExtractions = repository.projectReadExtractions(authToken, projectRead);
            rejectedIds = new String[lExtractions.length];
for (int i=0; lExtractions != null && i<lExtractions.length; i++) {
    rejectedIds[i] = ""+lExtractions[i].getID();}
lProjectEntities = new ProjectEntities();
lProjectEntities.setRejectedIDs(rejectedIds);
            // update the project
            repository.projectUpdate(authToken, projectRead, lProjectEntities);
        } catch (OpenAPIException ex) {
            ex.printStackTrace();
        }
    }
}
22.2.8 Use Case: Closing a Project with Hidden Assets

**Description**
When closing a project, the project lead is required to update the usage status of assets consumed in the project that have not already been designated as DEPLOYED or REJECTED.

However, certain Advanced Role Based Access Control (RBAC) settings in AquaLogic Enterprise Repository may prevent the project lead from seeing all assets consumed by the project.

If the project is closed, any hidden assets not already rejected are automatically designated as DEPLOYED.

When using AquaLogic Enterprise Repository, the project lead in this situation is notified that the project contains hidden assets, and is provided with the opportunity to contact users who have the necessary access to update the usage status of the hidden assets and to complete an asset value survey. Once the project lead is confident that the appropriate users have taken the necessary action, he/she can close the project.

The following example demonstrates a programmatic FLEX mechanism for handling the status update of assets that are hidden from the project lead at project closure.

**Sample Code is as follows:**

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.List;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectAsset;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import
```
com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateProjectExtractions {
    public static void main(String pArgs[]) throws OpenAPIException,
RemoteException,
ServiceException {
    try {
        // Connect to Oracle Enterprise Repository
        URL lURL = null;
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
        .getFlashlineRegistry(lURL);
        // Authenticate with OER
        AuthToken authToken = repository.authTokenCreate(pArgs[1],
pArgs[2]);
        // Update a project's extractions
        ProjectEntities lProjectEntities = null;
        try {
            // read an existing project
            Project projectRead = repository.projectRead(authToken, 50000);
            // get an extraction or create one
            long lExtractionID = 0;
            ProjectAsset[] lProjectAssets = projectRead.getAssets();
            if (lProjectAssets!=null && lProjectAssets.length>0) {
                lProjectAssets[0].getStatus();
lExtractionID = lProjectAssets[0].getID();
            } else {
                lProjectEntities = new ProjectEntities();
lExtractionID = repository.assetRead(authToken, 569).getID();
String[] lAssetIDs = { "**1ExtractionID"};
lProjectEntities.setAssetIDs(1AssetIDs);
repository.projectUpdate(authToken, projectRead, 1ProjectEntities);
        }
        // set the rejected assets ids
        String[] rejectedIds = null;
        projectRead = repository.projectRead(authToken, 50000); // reload modified
        project
        Extraction[] lExtractions = repository.projectReadExtractions(authToken,
projectRead);
        rejectedIds = new String[lExtractions.length];
        for (int i=0; lExtractions!=null && i<lExtractions.length; i++) {
            rejectedIds[i] = "**1Extractions[i].getID();
        }
lProjectEntities = new ProjectEntities();
lProjectEntities.setRejectedIDs(rejectedIds);
        // update the project
        repository.projectUpdate(authToken, projectRead, lProjectEntities);
    } catch (OpenAPIException ex) {
        ex.printStackTrace();
    }
    // revert extractions
22.2.9 Use Case: Add Users and Related Projects to a Project

Description
The process of adding users to project is similar to the process of adding related projects.

Sample Code is as follows:
```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.APIValidationException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class AddUsersAndRelatedProjectsToProject {
    public static void main(String[] pArgs) throws OpenAPIException,
            RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                    pArgs[2]);
            // Add users and related projects to a project
```
Project projectRead = new Project();
String[] newLeaderIDs = { '99' };
ProjectEntities lEntities = new ProjectEntities();
try {
    // read an existing project
    projectRead = repository.projectRead(authToken, 50000);
    // create two new projects
    Project lParentProject = createNewProject(repository, authToken, "My Parent Project");
    Project lChildProject = createNewProject(repository, authToken, "My Child Project");
    String[] newParentIDs = { "$\_lParentProject.getID()" };
    String[] newChildIDs = { "$\_lChildProject.getID()" };
    // create two new users
    RegistryUser lUserOne = createNewUser(repository, authToken, "one");
    RegistryUser lUserTwo = createNewUser(repository, authToken, "two");
    String[] newMemberIDs = { "$\_lUserOne.getID()", "$\_lUserTwo.getID()" };
    // set the added leader ids
    lEntities.setAddedLeaderIDs(newLeaderIDs);
    // set the added member ids
    lEntities.setAddedMemberIDs(newMemberIDs);
    // set the added children project ids
    lEntities.setAddedChildIDs(newChildIDs);
    // set the added parent project ids
    lEntities.setAddedParentIDs(newParentIDs);
    // update the project
    repository.projectUpdate(authToken, projectRead, lEntities);
} catch (OpenAPIException ex) {
    throw ex;
}

protected static Project createNewProject(FlashlineRegistry repository, AuthToken authToken, String pName)
throws APIValidationException, RemoteException {
    Project lProject = new Project();
    ProjectEntities lProjectEntities = new ProjectEntities();
    lProject.setName(pName + Calendar.getInstance().getTimeInMillis()); // force uniqueness
    lProject.setDepartmentID(50000); // a department with id 50000 must already exist
The following example presents an alternate way of adding users and related projects. In this example the added users/projects will be the ONLY users/projects assigned to the project. Any users/projects not included in the String Array of IDs will be removed from the project. This option combines adding and removing users into one step.

Sample Code is as follows:

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.APIValidationException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class AddUsersAndRelatedProjectsToProject2 {
    public static void main(String pArgs[]) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                    pArgs[2]);
            // The following example presents an alternate way of adding users and
            // related projects.
```
// In this example the added users/projects will be the ONLY
// users/projects assigned to the project.
// Any users/projects not included in the String Array of IDs will be
// removed from the project.
// This option combines adding and removing users into one step.
Project projectRead = new Project();
String[] newLeaderIDs = { "50003" };  
ProjectEntities lEntities = new ProjectEntities();
try {
    // -----------------------------------
    // read an existing project
    projectRead = repository.projectRead(authToken, 50000);
    // -----------------------------------
    // create two new projects
    Project lParentProject = createNewProject(repository, authToken, "My
    Parent Project");
    Project lChildProject = createNewProject(repository, authToken, "My Child
    Project");
    String[] newParentIDs = { "*"+lParentProject.getID() };  
    String[] newChildIDs = { "*"+lChildProject.getID() };  
    // -----------------------------------
    // create two new users
    RegistryUser lUserOne = createNewUser(repository, authToken, "one");
    RegistryUser lUserTwo = createNewUser(repository, authToken, "two");
    String[] newMemberIDs = { "*"+lUserOne.getID(), "*"+lUserTwo.getID() };  
    // -----------------------------------
    // set the leader ids
    lEntities.setLeaderIDs(newLeaderIDs);
    // -----------------------------------
    // set the member ids
    lEntities.setMemberIDs(newMemberIDs);
    // -----------------------------------
    // set the children project ids
    lEntities.setChildIDs(newChildIDs);
    // -----------------------------------
    // set the parent project ids
    lEntities.setParentIDs(newParentIDs);
    // -----------------------------------
    // update the project
    repository.projectUpdate(authToken, projectRead, lEntities);
} catch (OpenAPIException ex) {
    throw ex;
}
}
22.2.10 Use Case: Remove Related Projects and Users from a Project

**Description:**
The process of removing users from a project is similar to the process of removing related projects.

**Sample Code is as follows:**
```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.decision.ExtractionReassignmentDecision;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class RemoveRelatedProjectsAndUsersFromProject {
    public static void main(String[] args) throws OpenAPIException,
RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL url = new URL(args[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(url);
        }
    }
}
```
// Authenticate with OER
AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
long lParentProjectID = createProject(repository, authToken).getID();
long lChildProject1ID = createProject(repository, authToken).getID();
long lChildProject2ID = createProject(repository, authToken).getID();
long lUser1ID = createUser(repository, authToken).getID();
long lUser2ID = createUser(repository, authToken).getID();
long lUser3ID = createUser(repository, authToken).getID();
long lUser4ID = createUser(repository, authToken).getID();
long lUser5ID = createUser(repository, authToken).getID();
long lUser6ID = createUser(repository, authToken).getID();
// -----------------------------------
// Remove related projects and users from a project
String[] removedParentProjectIDs = {"+lParentProjectID"};
String[] removedChildProjectIDs = {"+lChildProject1ID," + lChildProject2ID};
String[] removedLeaderIDs = {"+lUser1ID"};
String[] removedMemberIDs = {"+lUser2ID"};
ProjectEntities lEntities = new ProjectEntities();
try {
    projectRead = repository.projectRead(authToken, 50000);
} catch (OpenAPIException ex) {
    throw ex;
} catch (OpenAPIException ex) {
}
try {
    // -----------------------------------
    // set the removed parent project ids
    lEntities.setRemovedParentIDs(removedParentProjectIDs);
    // -----------------------------------
    // set the removed children project ids
    lEntities.setRemovedChildIDs(removedChildProjectIDs);
    // -----------------------------------
    // set the remove leader ids
    lEntities.setRemovedLeaderIDs(removedLeaderIDs);
    // -----------------------------------
    // set the removed member ids
    lEntities.setRemovedMemberIDs(removedMemberIDs);
    // -----------------------------------
    // set the extraction reassignment decisions
    ExtractionReassignmentDecision[] decisions = new ExtractionReassignmentDecision[2];
    ExtractionReassignmentDecision decision = new ExtractionReassignmentDecision();
    decision.setUserID(lUser3ID);
    decision.setReassignUserID(lUser4ID);
    decisions[0] = decision;
    decision = new ExtractionReassignmentDecision();
    decision.setUserID(lUser5ID);
    decision.setReassignUserID(lUser6ID);
    decisions[1] = decision;
    // -----------------------------------
    // set the userid for the reassigned extracions
    lEntities.setReassignIDs(decisions);
    // -----------------------------------
    // update the project
    repository.projectUpdate(authToken, projectRead, lEntities);
} catch (OpenAPIException ex) {
As an alternative, the following example tells the system which users/projects to keep, rather than telling it which ones to remove.

Sample Code is as follows:

```java
class RemoveRelatedProjectsAndUsersFromProject2 {
    public static void main(String[] args) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            // Revert extractions
            repository.extractionResetDatabase();
            catch (OpenAPIException lEx) {
                System.out.println("ServerCode = " + lEx.getServerErrorCode());
                System.out.println("Message    = " + lEx.getMessage());
                lEx.printStackTrace();
            } catch (RemoteException lEx) {
                lEx.printStackTrace();
            } catch (ServiceException lEx) {
                lEx.printStackTrace();
            } catch (MalformedURLException lEx) {
                lEx.printStackTrace();
            }

            protected static Project createProject(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
                Project lProject = new Project();
                ProjectEntities lProjectEntities = new ProjectEntities();
                lProject.setName("Project " + Calendar.getInstance().getTimeInMillis());
                lProject.setDepartmentID(50000); // a department with id 50000 must
                String[] lLeaderIds = new String[] { "99" };
                lProjectEntities.setLeaderIDs(lLeaderIds);
                lProject = repository.projectCreate(authToken, lProject, lProjectEntities);
                return lProject;
            }

            protected static RegistryUser createUser(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
                String lUserName = "user" + Calendar.getInstance().getTimeInMillis();
                return repository.userCreate(authToken, lUserName, "First", "User", "user@example.com", "user", false, false, false);
            }
        }
```

URL lURL = null;
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
    .getFlashlineRegistry(lURL);
// Authenticate with OER
// Authenticated with OER
AuthToken authToken = repository.authTokenCreate(pArgs[1],
    pArgs[2]);
// As an alternative, the following example tells the system which
// users/projects to keep,
// rather than telling it which ones to remove.
Project projectRead = new Project();
String[] lParentProjectIDs = { "50003" };
String[] lChildProjectIDs = { "50002", "50001" };
String[] lLeaderIDs = { "50001" };
String[] lMemberIDs = { "50005" };
ProjectEntities lEntities = new ProjectEntities();
try {
    projectRead = repository.projectRead(authToken, 50000);
} catch (OpenAPIException ex) {
    throw ex;
}
try {
    // set the parent project ids
    lEntities.setParentIDs(lParentProjectIDs);
    // set the children project ids
    lEntities.setChildIDs(lChildProjectIDs);
    // set the leader ids
    lEntities.setLeaderIDs(lLeaderIDs);
    // set the member ids
    lEntities.setMemberIDs(lMemberIDs);
    // set the extraction reassignment decisions
    ExtractionReassignmentDecision[] decisions = new
    ExtractionReassignmentDecision[2];
    ExtractionReassignmentDecision decision = new
    ExtractionReassignmentDecision();
    decision.setUserID(50011);
    decision.setReassignUserID(50001);
    decisions[0] = decision;
    decision = new ExtractionReassignmentDecision();
    decision.setUserID(50012);
    decision.setReassignUserID(50005);
    decisions[1] = decision;
    // set the userid for the reassigned extracions
    lEntities.setReassignIDs(decisions);
    // update the project
    repository.projectUpdate(authToken, projectRead, lEntities);
} catch (OpenAPIException ex) {
    throw ex;
}
22.2.11 Use Case: Update a Project's Extractions - Reassign Extractions to a Different User on the Same or a Different Project

Description
Extractions can be reassigned from one user to another. The user receiving the reassigned extractions can be on the same or a different project.

Sample Code as follows:
```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.decision.ExtractionReassignmentDecision;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateProjectExtractionsWithReassign {
    public static void main(String pArgs[]) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
```
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```

pArgs[2]);
Project lProject = null;
long currentProjectID = 50000; // an existing project with id 50000 must
// exist
long someProjectID = 0; // an existing project with id 50001 must
// exist where re-extractions are being
// assigned to
long extractionID = 50002; // the id of the extraction being reassigned
long reassignUserID = 0; // the id of the user being assigned to this
// extraction

// Update a project's extractions - reassign extractions to a different
// user on the same or different project
// -----------------------------------
// read a project, get a sample project
lProject = repository.projectRead(authToken, currentProjectID);
someProjectID = createProject(repository, authToken).getID();
// -----------------------------------
// get a member of the project to reassign
Project lReassignProject = repository.projectRead(authToken, someProjectID);
String[] memberIDs = repository.projectReadMemberIDs(authToken, lReassignProject);
if (memberIDs!=null && memberIDs.length>0) {
    reassignUserID = Long.parseLong(memberIDs[0]);
}
// -----------------------------------
// if no members exist, create a user and add them
if (reassignUserID==0) {
    ProjectEntities lProjectEntities = new ProjectEntities();
    reassignUserID = createUser(repository, authToken).getID();
    String[] newMemberIDs = { "**reassignUserID";
    lProjectEntities.setAddedMemberIDs(newMemberIDs);
    repository.projectUpdate(authToken, lReassignProject, lProjectEntities);
}
// -----------------------------------
// set the extraction reassignment decision
ExtractionReassignmentDecision[] lDecisions = new
ExtractionReassignmentDecision[1];
ExtractionReassignmentDecision lDecision = new
ExtractionReassignmentDecision();
// -----------------------------------
// set the reassigned project id
lDecision.setProjectID(someProjectID);
// -----------------------------------
// specify which extraction (by id)
lDecision.setExtractionID(extractionID);
// -----------------------------------
// set the reassigned user id
lDecision.setReassignUserID(reassignUserID);
1Decisions[0] = lDecision;
// -----------------------------------
// reassign project extractions
repository.projectReassignExtractions(authToken, lProject,
1Decisions);
}
```

```
} catch (OpenAPIException lEx) {
System.out.println('ServerCode = ' + lEx.getServerErrorCode());
System.out.println('Message    = ' + lEx.getMessage());
System.out.println('StackTrace:');
lEx.printStackTrace();
}
```

```
catch (RemoteException lEx) {
```

```
protected static Project createProject(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
    Project lProject = new Project();
    ProjectEntities lProjectEntities = new ProjectEntities();
    lProject.setName("Project "+Calendar.getInstance().getTimeInMillis());
    lProject.setDepartmentID(50000); // a department with id 50000 must
    String[] lLeaderIds = new String[] { "99" }
    lProjectEntities.setLeaderIDs(lLeaderIds);
    lProject = repository.projectCreate(authToken, lProject, lProjectEntities);
    return lProject;
}

protected static RegistryUser createUser(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
    String lUserName = "user"+Calendar.getInstance().getTimeInMillis();
    return repository.userCreate(authToken, lUserName, "First", "User", "user@example.com", "user", false, false, false);
}

22.2.12 Use Case: Update a Project's User - Reassign User and His/Her Extractions to Another Project

Description
Reassign a user and his/her extractions to another project.

Sample Code is as follows:
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.decision.ExtractionReassignmentDecision;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateProjectExtractionsWithReassign {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
URL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
  .getFlashlineRegistry(URL);
// Authenticate with OER
// AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
Project lProject = null;
long currentProjectID = 50000; // an existing project with id 50000 must exist
long someProjectID = 0; // an existing project with id 50001 must exist where re-extractions are being assigned to
long extractionID = 50002; // the id of the extraction being reassigned
long reassignUserID = 0; // the id of the user being assigned to this extraction

// Update a project’s extractions - reassign extractions to a different user on the same or different project
// read a project, get a sample project
lProject = repository.projectRead(authToken, currentProjectID);
someProjectID = createProject(repository, authToken).getID();

// get a member of the project to reassign
Project lReassignProject = repository.projectRead(authToken, someProjectID);
String[] memberIDs = repository.projectReadMemberIDs(authToken, lReassignProject);
if (memberIDs!=null && memberIDs.length>0) {
  reassignUserID = Long.parseLong(memberIDs[0]);
}

// if no members exist, create a user and add them
if (reassignUserID==0) {
  ProjectEntities lProjectEntities = new ProjectEntities();
  reassignUserID = createUser(repository, authToken).getID();
  String[] newMemberIDs = { "**+reassignUserID" };
  lProjectEntities.setAddedMemberIDs(newMemberIDs);
  repository.projectUpdate(authToken, lReassignProject, lProjectEntities);
}

// set the extraction reassignment decision
ExtractionReassignmentDecision[] lDecisions = new ExtractionReassignmentDecision[1];
ExtractionReassignmentDecision lDecision = new ExtractionReassignmentDecision();
ExtractionReassignmentDecision[] lDecisions = new ExtractionReassignmentDecision[1];
ExtractionReassignmentDecision lDecision = new ExtractionReassignmentDecision();

// set the reassigned project id
lDecision.setProjectID(someProjectID);
// specify which extraction (by id)
lDecision.setExtractionID(extractionID);
// set the reassigned user id
lDecision.setReassignUserID(reassignUserID);
lDecisions[0] = lDecision;

// reassign project extractions
repository.projectReassignExtractions(authToken, lProject,
protected static Project createProject(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
    Project lProject = new Project();
    ProjectEntities lProjectEntities = new ProjectEntities();
    lProject.setName("Project " + Calendar.getInstance().getTimeInMillis());
    lProject.setDepartmentID(50000); // a department with id 50000 must
    String[] lLeaderIds = new String[] { "99" };
    lProjectEntities.setLeaderIDs(lLeaderIds);
    lProject = repository.projectCreate(authToken, lProject, lProjectEntities);
    return lProject;
}

protected static RegistryUser createUser(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
    String lUserName = "user" + Calendar.getInstance().getTimeInMillis();
    return repository.userCreate(authToken, lUserName, "First", "User",
    "user@example.com", "user", false, false, false);
}

22.2.13 Use Case: Update a Project's User - Reassign User Only (Not the User's Extractions) to Another Project

Description
Users can be reassigned from one project to another. If the user is to be moved without
his/her extractions, the extractions must first be reassigned to another project member
before the user is reassigned.

Sample Code is as follows:
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.decision.ExtractionReassignmentDecision;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.RegistryUser;

System.out.println("ServerCode = " + lEx.getServerErrorCode());
System.out.println("Message    = " + lEx.getMessage());
System.out.println("StackTrace:");
lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateProjectUserWithReassign2 {
    public static void main(String pArgs[]) throws OpenAPIException,
        RemoteException,
        ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            Project lProject = null;
            Project someProject = null; // the id the other project
            Project reassignProject = null; // the id of the project being reassigned
            long currentProjectID = 50000; // the id of the current project
            long extractionID = 0; // the id of the extraction
            long extractionReassignUserID = 0; // the id of the user being
            long projectReassignUserID = 0; // the id of the user being reassigned
            // -----------------------------------
            // Update a project's user - reassign only the user (not their
            // extractions) to another project
            // -----------------------------------
            // read a project
            lProject = repository.projectRead(authToken, currentProjectID);
            // -----------------------------------
            // create some projects
            someProject = createProject(repository, authToken);
            reassignProject = createProject(repository, authToken);
            // -----------------------------------
            // get a member of the project to reassign
            String[] memberIDs = repository.projectReadMemberIDs(authToken, lProject);
            if (memberIDs!=null && memberIDs.length>0) {
                extractionReassignUserID = Long.parseLong(memberIDs[0]);
                if (memberIDs.length>1) {
                    projectReassignUserID = Long.parseLong(memberIDs[0]);
                }
            }
            // -----------------------------------
            // if no members exist, create users and add them
            if (extractionReassignUserID==0) {
                ProjectEntities lProjectEntities = new ProjectEntities();
                extractionReassignUserID = createUser(repository, authToken).getID();
                lProjectEntities.setAddedMemberIDs(new String[]{"+extractionReassignUserID");
                repository.projectUpdate(authToken, lProject, lProjectEntities);
            }
            if (projectReassignUserID==0) {
                ProjectEntities lProjectEntities = new ProjectEntities();
                projectReassignUserID = createUser(repository, authToken).getID();
                lProjectEntities.setAddedMemberIDs(new String[]{"+projectReassignUserID");
            }
        }
    }
}
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repository.projectUpdate(authToken, lProject, lProjectEntities);

} // get extraction for user or create one
Extraction[] lAssetExtractions = repository.projectReadExtractions(authToken, lProject);
if (lAssetExtractions!=null && lAssetExtractions.length>0) {
    extractionID = lAssetExtractions[0].getID();
}
if (extractionID==0) {
    // create new extraction
    ProjectEntities lProjectEntities = new ProjectEntities();
    Asset lAsset = repository.assetRead(authToken, 569);
    lProjectEntities.setAssetIDs(new String[] {""+lAsset.getID() });
    repository.projectUpdate(authToken, lProject, lProjectEntities);
}

// -----------------------------------
// add users to reassign project (if they aren't already)
{
    Project lReassignProject = repository.projectRead(authToken,
    reassignProject.getID());
    boolean isMemberExtraction = false, isMemberProject = false;
    String[] reassignMemberIDs = repository.projectReadMemberIDs(authToken,
    lReassignProject);
    for (int i=0; reassignMemberIDs!=null && i<reassignMemberIDs.length; i++) {
        if (Long.parseLong(reassignMemberIDs[i].trim())==extractionReassignUserID)
            isMemberExtraction = true;
        if (Long.parseLong(reassignMemberIDs[i].trim())==projectReassignUserID)
            isMemberProject = true;
    }
    if (!isMemberExtraction) {
        ProjectEntities lProjectEntities = new ProjectEntities();
        lProjectEntities.setAddedMemberIDs(new String[] {""+extractionReassignUserID });
        repository.projectUpdate(authToken, lReassignProject, lProjectEntities);
    }
    if (!isMemberProject) {
        ProjectEntities lProjectEntities = new ProjectEntities();
        lProjectEntities.setAddedMemberIDs(new String[] {""+projectReassignUserID });
        repository.projectUpdate(authToken, lReassignProject, lProjectEntities);
    }
}

// -----------------------------------
// add users to some project (if they aren't already)
{
    Project lSomeProject = repository.projectRead(authToken,
    someProject.getID());
    boolean isMemberExtraction = false, isMemberProject = false;
    String[] SomeMemberIDs = repository.projectReadMemberIDs(authToken,
    lSomeProject);
    for (int i=0; SomeMemberIDs!=null && i<SomeMemberIDs.length; i++) {
        if (Long.parseLong(SomeMemberIDs[i].trim())==extractionReassignUserID)
            isMemberExtraction = true;
        if (Long.parseLong(SomeMemberIDs[i].trim())==projectReassignUserID)
            isMemberProject = true;
    }
    if (!isMemberExtraction) {
        ProjectEntities lProjectEntities = new ProjectEntities();
        lProjectEntities.setAddedMemberIDs(new String[] {""+extractionReassignUserID });
        repository.projectUpdate(authToken, lSomeProject, lProjectEntities);
    }
    if (!isMemberProject) {
        ProjectEntities lProjectEntities = new ProjectEntities();
        lProjectEntities.setAddedMemberIDs(new String[] {""+projectReassignUserID });
        repository.projectUpdate(authToken, lSomeProject, lProjectEntities);
    }
}

// -------------------------------
// add users to some project (if they aren't already)
protected static Project createProject(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
    Project lProject = new Project();
    ProjectEntities lProjectEntities = new ProjectEntities();
    lProject.setName("Project \d+");
    lProject.setDepartmentID(50000); // a department with id 50000 must
    // -----------------------------------
    // set extraction reassignment decision
    ExtractionReassignmentDecision[] lDecisions = new ExtractionReassignmentDecision[1];
    ExtractionReassignmentDecision lDecision = new ExtractionReassignmentDecision();
    lDecision.setProjectID(someProject.getID());
    lDecision.setExtractionID(extractionID);
    lDecision.setReassignUserID(extractionReassignUserID);
    lDecisions[0] = lDecision;
    // reassign project extractions
    repository.projectReassignExtractions(authToken, lProject, lDecisions);
    // verify reassignment
    lProject = repository.projectRead(authToken, currentProjectID);
    ProjectUserType userType = repository.projectReadUserTypes(authToken);
    lDecisions = new ExtractionReassignmentDecision[1];
    lDecision = new ExtractionReassignmentDecision();
    lDecision.setProjectID(reassignProject.getID());
    lDecision.setReassignUserID(projectReassignUserID);
    lDecision.setReassignType(userType.getUserTypeLeader());
    lDecisions[0] = lDecision;
    repository.projectReassignUsers(authToken, lProject, lDecisions);
    // -----------------------------------
    // revert extractions
    repository.extractionResetDatabase();
}
22.2.14 Use Case: Read the Value-Provided for a Project and Asset

**Description**
Reads the value-provided detail for a project and asset.

**Sample Code is as follows:**
```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Answer;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Choice;
import com.flashline.registry.openapi.entity.ChoiceList;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.ExtractionDownload;
import com.flashline.registry.openapi.entity.ProjectAssetValue;
import com.flashline.registry.openapi.entity.Question;
import com.flashline.registry.openapi.entity.SurveyTaken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ReadValueProvidedForProjectAndAsset {
    public static void main(String pArgs[]) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                    pArgs[2]);
            // Read the value provided for a project and asset
            long projectid = 50000; // the id of the project
```
long assetid = 569; // the id of the asset
// -------------------------------------------------
// Make sure the project has an extraction
long[] lAssetIDs = { assetid };
ExtractionDownload[] extractionDownload = repository.extractionCreate(authToken, projectid, lAssetIDs);
Extraction extraction = repository.extractionReadByProjectAndAsset(authToken, projectid, assetid);
// -------------------------------------------------
// take survey and update
SurveyTaken surveyTaken = takeSurvey(repository, authToken, extraction);
surveyTaken = repository.surveyTakenUpdate(authToken, surveyTaken);
extraction = repository.extractionUpdateSurvey(authToken, extraction, surveyTaken);
// -------------------------------------------------
// read project asset values
ProjectAssetValue[] projectAssetValues = repository.projectAssetValueRead(authToken, projectid, assetid);
if (projectAssetValues != null) {
    for (int i = 0; i < projectAssetValues.length; i++) {
        ProjectAssetValue projectAssetValue = projectAssetValues[i];
        projectAssetValue.getUserInfo().getUserName();
        projectAssetValue.getExtractionDate();
        projectAssetValue.getExtractionStatus();
        projectAssetValue.getPredictedValue();
        projectAssetValue.isPredictedValueSelected();
        projectAssetValue.getConsumerFoundValue();
        projectAssetValue.getConsumerUsage();
        projectAssetValue.getConsumerValue();
        projectAssetValue.isConsumerValueSelected();
        projectAssetValue.getProjectLeadUsage();
        projectAssetValue.getProjectLeadValue();
        projectAssetValue.isProjectLeadValueSelected();
        projectAssetValue.getAssetUsage();
        projectAssetValue.getAssetValue();
        projectAssetValue.getAssetValueSource();
    }
}
// -------------------------------------------------
// revert extractions
repository.extractionResetDatabase();
}

} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message    = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}

protected static SurveyTaken takeSurvey(FlashlineRegistry repository, AuthToken authToken, Extraction extraction)
    throws OpenAPIException, RemoteException {
    // -------------------------------------------------
    // take survey
    SurveyTaken surveyTaken = repository.surveyTakenRead(authToken, extraction);
22.2.15 Use Case: Update the Value Provided for a Project and Asset - Use Predicted Value

**Description**
Uses the predicted value to update the value-provided for a project and asset.

**Sample Code is as follows:**

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
```
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Answer;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Choice;
import com.flashline.registry.openapi.entity.ChoiceList;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.ExtractionDownload;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectAssetValue;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.Question;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.entity.SurveyTaken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateValueProvidedForProjectAndUserWithPredictedValue {
    public static void main(String pArgs[]) throws OpenAPIException,
        RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
lURL = new URL(pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
            .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // Update the value provided for a project and asset - use predicted value
            long userid = repository.userReadByAuthToken(authToken).getID(); // the id
            of the user
            long projectid = 50000; // the id of the project
            long assetid = 569; // the id of the asset
            repository.testExtractionResetDatabaseForProject(projectid); // for sample
            "only"
            Project lProject = repository.projectRead(authToken, projectid); // for
            if no user id exists, create a user
            if (userid==0) {
                userid = createUser(repository, authToken).getID();
            }
            ProjectEntities lProjectEntities = new ProjectEntities();
lProjectEntities.setAddedLeaderIDs(new String[]{"+userid");
repository.projectUpdate(authToken, lProject, lProjectEntities);
            // Get a RegistryUser for a user
            RegistryUser user = repository.userRead(authToken, userid);
            // Make sure the project has an extraction
            long[] lAssetIDs = { assetid };
            ExtractionDownload[] extractionDownload =
                repository.extractionCreate(authToken, projectid, lAssetIDs);
            Extraction extraction =
                repository.extractionDownloadGet(authToken, extractionDownload[0].getID());
        }
    }
}
repository.extractionReadByProjectAndAsset(authToken, projectid, assetid);

// take survey
SurveyTaken surveyTaken = repository.surveyTakenRead(authToken, extraction);
Question[] questions = repository.surveyReadQuestions(authToken);
ChoiceList choiceList = null;
Choice[] choices = null;
Answer[] answers = new Answer[4];
for(int i=0; i<answers.length; i++){
    answers[i] = new Answer();
}

// Sort questions
Question[] sortedQuestions = new Question[4];
for (int i=0;i<questions.length;i++) {
    if (questions[i].getId()==100) {
        sortedQuestions[0] = questions[i];
    }
    if (questions[i].getId()==101) {
        sortedQuestions[1] = questions[i];
    }
    if (questions[i].getId()==102) {
        sortedQuestions[2] = questions[i];
    }
    if (questions[i].getId()==103) {
        sortedQuestions[3] = questions[i];
    }
}
answers[0].setQuestionId(sortedQuestions[0].getId());
choiceList = sortedQuestions[0].getChoiceList();
choices = choiceList.getChoices();
answers[0].setChoiceId(choices[0].getId());
answers[0].setValue(choices[0].getValue());
answers[1].setQuestionId(sortedQuestions[1].getId());
answers[1].setChoiceId(0);
answers[1].setValue("100");
answers[2].setQuestionId(sortedQuestions[2].getId());
answers[2].setChoiceId(0);
answers[2].setValue("200");
answers[3].setQuestionId(sortedQuestions[3].getId());
choiceList = sortedQuestions[3].getChoiceList();
choices = choiceList.getChoices();
answers[3].setChoiceId(choices[3].getId());
answers[3].setValue(choices[3].getValue());
surveyTaken.setAnswers(answers);

// update survey
surveyTaken = repository.surveyTakenUpdate(authToken, surveyTaken);
extraction = repository.extractionUpdateSurvey(authToken, extraction, surveyTaken);

// Get a ProjectAssetValue for a project asset and user.
ProjectAssetValue projectAssetValue = repository
    .projectAssetValueReadForUser(authToken, projectid, assetid, user);
if (projectAssetValue != null) {
    // update the project asset value
    projectAssetValue = repository.projectAssetValueUpdate(
        authToken, projectAssetValue, "predicted_selected");
}
22.2.16 Use Case: Update the Value Provided for a Project and Asset - Use Consumer Value

Description
Uses the consumer value to update the value-provided for a project and asset.

Sample Code is as follows:

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Answer;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Choice;
import com.flashline.registry.openapi.entity.ChoiceList;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.ExtractionDownload;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectAssetValue;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.Question;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.entity.SurveyTaken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateValueProvidedForProjectAndUserWithConsumerValue {
    public static void main(String[] pArgs) {
        try {
            System.out.println("--- recipies ---");
            repository.extractionResetDatabase();
            catch (OpenAPIException lEx) {
                System.out.println("ServerCode = " + lEx.getServerErrorCode());
                System.out.println("Message = " + lEx.getMessage());
                System.out.println("StackTrace:");
                lEx.printStackTrace();
            } catch (MalformedURLException lEx) {
                lEx.printStackTrace();
            } catch (RemoteException lEx) {
                lEx.printStackTrace();
            } catch (ServiceException lEx) {
                lEx.printStackTrace();
            }
            protected static RegistryUser createUser(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
                String lUserName = "user"+Calendar.getInstance().getTimeInMillis();
                return repository.userCreate(authToken, lUserName, "First", "User",
                "user@example.com", "user", false, false, false);
            }
        }
    }
}
```
// Connect to Oracle Enterprise Repository
TRLURL = null;
TRLURL = new URL(
pArgs[0]);
FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
.getFlashlineRegistry(TRLURL);
// Authenticate with OER
AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
// Update the value-provided for a project and asset - use consumer value
long userID = repository.userReadByAuthToken(authToken).getID(); // ID of
the user being read
long projectID = 50000; // ID of project being updated
long assetID = 569; // ID of asset
repository.testExtractionResetDatabaseForProject(projectID); // for sample
*only*
Project lProject = repository.projectRead(authToken, projectID);
// if no user id exists, create a user
if (userID==0) {
    userID = createUser(repository, authToken).getID();
}
ProjectEntities lProjectEntities = new ProjectEntities();
lProjectEntities.setAddedLeaderIDs(new String[]{"+userID ");
repository.projectUpdate(authToken, lProject, lProjectEntities);
// Get the user
RegistryUser user = repository.userRead(authToken, userID);
// Make sure the project has an extraction
long[] lAssetIDs = { assetID }; ExtractionDownload[] extractionDownload =
repository.extractionCreate(authToken, projectID, lAssetIDs);
Extraction extraction =
repository.extractionReadByProjectAndAsset(authToken, projectID, assetID);
// take survey
SurveyTaken surveyTaken = repository.surveyTakenRead(authToken, extraction);
Question[] questions = repository.surveyReadQuestions(authToken);
ChoiceList choiceList = null;
Choice[] choices = null;
Answer[] answers = new Answer[4];
for(int i=0; i<answers.length; i++){
    answers[i] = new Answer();
}
// Sort questions
Question[] sortedQuestions = new Question[4];
for (int i=0;i<questions.length;i++) {
    if (questions[i].getId()==100) {
        sortedQuestions[0] = questions[i];
    }
    if (questions[i].getId()==101) {
        sortedQuestions[1] = questions[i];
    }
    if (questions[i].getId()==102) {
        sortedQuestions[2] = questions[i];
    }
}
if (questions[i].getId() == 103) {
    sortedQuestions[3] = questions[i];
}

answers[0].setQuestionId(sortedQuestions[0].getId());
choiceList = sortedQuestions[0].getChoiceList();
choices = choiceList.getChoices();
answers[0].setChoiceId(choices[0].getId());
answers[0].setValue(choices[0].getValue());
answers[1].setQuestionId(sortedQuestions[1].getId());
answers[1].setChoiceId(0);
answers[1].setValue("100");
answers[2].setQuestionId(sortedQuestions[2].getId());
answers[2].setChoiceId(0);
answers[2].setValue("200");
answers[3].setQuestionId(sortedQuestions[3].getId());
choiceList = sortedQuestions[3].getChoiceList();
choices = choiceList.getChoices();
answers[3].setChoiceId(choices[3].getId());
answers[3].setValue(choices[3].getValue());
surveyTaken.setAnswers(answers);
    // -----------------------------------
    // update survey
    surveyTaken = repository.surveyTakenUpdate(authToken, surveyTaken);
    extraction = repository.extractionUpdateSurvey(authToken, extraction, surveyTaken);
    // -----------------------------------
    // Get a ProjectAssetValue for a project asset and user.
    ProjectAssetValue projectAssetValue = repository.projectAssetValueReadForUser(authToken, projectID, assetID, user);
    if (projectAssetValue != null) {
        // If a ProjectAssetValue does not exist for this project, asset, and user combination a null value is returned.
        ProjectAssetValue projectAssetValueSelection = new ProjectAssetValue();
        projectAssetValue = repository.projectAssetValueUpdate(authToken, projectAssetValue, "consumer_selected");
    }
}
    } catch (OpenAPIException oapie) {
System.out.println("ServerCode = " + oapie.getServerErrorCode());
System.out.println("Message    = " + oapie.getMessage());
System.out.println("StackTrace:");
oapie.printStackTrace();
} catch (RemoteException re) {
    re.printStackTrace();
} catch (ServiceException se) {
    se.printStackTrace();
} catch (MalformedURLException mue) {
    mue.printStackTrace();
}

protected static RegistryUser createUser(FlashlineRegistry repository, AuthToken authToken) throws OpenAPIException, RemoteException {
    String lUserName = "user" + Calendar.getInstance().getTimeInMillis();
    return repository.userCreate(authToken, lUserName, "First", "User", "user@example.com", "user", false, false, false);
}
}
22.2.17 Use Case: Update the Value-Provided for a Project and Asset - Use Project Lead Value

Description
Uses the project lead value to update the value-provided for a project and asset.

Sample Code is as follows:

```java
package com.flashline.sample.projectapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Answer;
import com.flashline.registry.openapi.entity.AssetUsageType;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Choice;
import com.flashline.registry.openapi.entity.ChoiceList;
import com.flashline.registry.openapi.entity.Extraction;
import com.flashline.registry.openapi.entity.ExtractionDownload;
import com.flashline.registry.openapi.entity.Project;
import com.flashline.registry.openapi.entity.ProjectAssetValue;
import com.flashline.registry.openapi.entity.ProjectEntities;
import com.flashline.registry.openapi.entity.Question;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.entity.SurveyTaken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class UpdateValueProvidedForProjectAndUserWithLeadValue {
    public static void main(String[] pArgs) {
        try {
            // Connect to Oracle Enterprise Repository
            // -----------------------------------
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
            // -----------------------------------
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // -----------------------------------
            // Update the value provided for a project and asset - use project lead value
            long userID = repository.userReadByAuthToken(authToken).getID(); // ID of the user being read
            long projectID = 50000; // ID of project being updated
            long assetID = 569; // ID of asset
            float newValue = 50.0f; // Project asset value
            repository.testExtractionResetDatabaseForProject(projectID); // for sample "only"
            Project lProject = repository.projectRead(authToken, projectID);
            // -----------------------------------
            ProjectAssetValue lProjectAssetValue = new ProjectAssetValue(userId, assetId, newValue);
            repository.updateProjectAssetValue(authToken, projectID, assetID, lProjectAssetValue);
        } finally {
            // Close the repository connection
            repository.closeConnection();
        }
    }
}
```
if (userID==0) {
    userID = createUser(repository, authToken).getID();
}

ProjectEntities lProjectEntities = new ProjectEntities();
lProjectEntities.setAddedLeaderIDs(new String[] { userID });
repository.projectUpdate(authToken, lProject, lProjectEntities);

// -----------------------------------
// Get a RegistryUser for a user.
RegistryUser user = repository.userRead(authToken, userID);
// -----------------------------------
// Make sure the project has an extraction
long[] lAssetIDs = { assetID };
ExtractionDownload[] extractionDownload = repository.extractionCreate(authToken, projectID, lAssetIDs);
Extraction extraction = repository.extractionReadByProjectAndAsset(authToken, projectID, assetID);

// -----------------------------------
// take survey
SurveyTaken surveyTaken = repository.surveyTakenRead(authToken, extraction);
Question[] questions = repository.surveyReadQuestions(authToken);
ChoiceList choiceList = null;
Choice[] choices = null;
Answer[] answers = new Answer[4];
for(int i=0; i<answers.length; i++){
    answers[i] = new Answer();
}

// -----------------------------------
// Sort questions
Question[] sortedQuestions = new Question[4];
for (int i=0; i<questions.length; i++) {
    if (questions[i].getId()==100) {
        sortedQuestions[0] = questions[i];
    } else if (questions[i].getId()==101) {
        sortedQuestions[1] = questions[i];
    } else if (questions[i].getId()==102) {
        sortedQuestions[2] = questions[i];
    } else if (questions[i].getId()==103) {
        sortedQuestions[3] = questions[i];
    }
}
        answers[0].setQuestionId(sortedQuestions[0].getId());
        choiceList = sortedQuestions[0].getChoiceList();
        choices = choiceList.getChoices();
        answers[0].setChoiceId(choices[0].getId());
        answers[0].setValue(choices[0].getValue());
        answers[1].setChoiceId(0);
        answers[1].setValue("100");
        answers[2].setChoiceId(0);
        answers[2].setValue("200");
        answers[3].setChoiceId(3);
        choiceList = sortedQuestions[3].getChoiceList();
        choices = choiceList.getChoices();
        answers[3].setChoiceId(choices[3].getId());
        answers[3].setValue(choices[3].getValue());
        surveyTaken.setAnswers(answers);
Use Cases

// -----------------------------------
// update survey
surveyTaken = repository.surveyTakenUpdate(authToken, surveyTaken);

extraction = repository.extractionUpdateSurvey(authToken, extraction,
surveyTaken);

// -----------------------------------
// Get a ~ProjectAssetValue for a project asset and user.
ProjectAssetValue projectAssetValue = repository
    .projectAssetValueReadForUser(authToken, projectID, assetID, user);
if (projectAssetValue != null) {
    // A null value is returned if no If a ProjectAssetValue does not exists
    // for this project, asset, and user combination.
    // -----------------------------------
    // Get an ~AssetUsageType array.
    AssetUsageType[] usageTypes = repository
        .projectAssetValueReadTypes(authToken);
    projectAssetValue.setProjectLeadUsage(usageTypes[1].getName());
    // Set the projectAssetValue to a AssetUsageType value.
    projectAssetValue.setProjectLeadValue(newValue); // Set to a new value.
}

protected static RegistryUser createUser(FlashlineRegistry repository, AuthToken
    authToken) throws OpenAPIException, RemoteException {
    String lUserName = "user"+Calendar.getInstance().getTimeInMillis();
    return repository.userCreate(authToken, lUserName, "First", "User",
        "user@example.com", "user", false, false, false);
}

}
This chapter provides an overview of Relationship Types API and describes the use cases using this API.

This chapter contains the following sections:

- Section 23.1, "Overview"
- Section 23.2, "Use Cases"

23.1 Overview

The Relationship Type defines the structure of a relationship that can be used to associate two assets.

**Asset Subsystems**

When creating or editing assets, Relationship Types are used to define or modify the relationships that exist between assets.

23.2 Use Cases

This section describes the use cases using the Relationship Types API. It contains the following topics:

- Section 23.2.1, "Use Case: Create a new relationship type"
- Section 23.2.2, "Use Case: Modify related assets"
- Section 23.2.3, "Use Case: Query related assets"

23.2.1 Use Case: Create a new relationship type

**Description**

Creating a new type of relationship to be used between assets.

**Sample code is as follows:**

```java
package com.flashline.sample.relationshiptypeapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.RelationshipType;
```
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class CreateNewRelationshipType {
    public static void main(String[] args) throws java.rmi.RemoteException,
        OpenAPIException {
        try {
            try {
                // Connect to Oracle Enterprise Repository
                URL url = null;
                url = new URL(args[0]);
                FlashlineRegistry repository =
                        new FlashlineRegistryServiceLocator().getFlashlineRegistry(url);
                // Authenticate with OER
                AuthToken authToken = repository.authTokenCreate(args[1], args[2]);
                // create the new relationship type
                String newRelationshipTypeName = "My-NewRelationshipTypeName";
                // Relationship Type name must contain only alpha characters or hyphens
                RelationshipType newRelationshipType =
                        repository.relationshipTypeCreate(authToken, newRelationshipTypeName);
                System.out.println("The new relationshipType id = " + newRelationshipType.getID());
                // set the direction definition and the display text describing the relationship type
                newRelationshipType.setDirection("ORDERED-BIDIRECTIONAL");
                newRelationshipType.setDisplayPrimary("Contained In"); // Source Asset - 'Contained In' - Target Asset
                newRelationshipType.setDisplaySecondary("Contains"); // Target Asset - 'Contains' - Source Asset
                newRelationshipType = repository.relationshipTypeUpdate(authToken,
                        newRelationshipType);
                // delete the new relationship type
                repository.relationshipTypeDelete(authToken, newRelationshipType.getID());
            } catch (OpenAPIException ex) {
                System.out.println("ServerCode = " + ex.getServerErrorCode());
                System.out.println("Message = " + ex.getMessage());
                ex.printStackTrace();
            } catch (RemoteException ex) {
                ex.printStackTrace();
            } catch (ServiceException ex) {
                ex.printStackTrace();
            } catch (MalformedURLException ex) {
                ex.printStackTrace();
            }
        } catch (OpenAPIException ex) {
            System.out.println("ServerCode = " + ex.getServerErrorCode());
            System.out.println("Message = " + ex.getMessage());
            ex.printStackTrace();
        } catch (RemoteException ex) {
            ex.printStackTrace();
        } catch (ServiceException ex) {
            ex.printStackTrace();
        } catch (MalformedURLException ex) {
            ex.printStackTrace();
        }
    }
}
23.2.2 Use Case: Modify related assets

Description
A target asset is related to other assets using My RelationshipType. Using this same relationship type, establish a relationship to an additional asset.

Sample code is as follows:
```java
package com.flashline.sample.relationshiptypeapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.RelationshipType;
import com.flashline.registry.openapi.query.RelationshipTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class FindRelationshipTypeAndUseInAsset {
    public static void main(String[] args) throws OpenAPIException,
    RemoteException, ServiceException {
        try{
            // Connect to Oracle Enterprise Repository
            URL url = null;
            url = new URL(args[0]);
            FlashlineRegistry repository = new
            FlashlineRegistryServiceLocator().getFlashlineRegistry(url);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(args[1],
            args[2]);
            Asset myAsset = repository.assetRead(authToken, 563);
            //MY_OTHER_ASSET_ID should be an integer and should be the
            id of an asset in the repository
            RelationshipType[] allRelationshipTypes =
            getAllRelationshipTypes(repository, authToken);
            for (int i = 0; i < allRelationshipTypes.length; i++) {
                if (allRelationshipTypes[i].getName().equals("MyRelationshipType2")) {
                    //This is the relationship type, modify the assets that
                    are related
                    // using it
                    RelationshipType myRelationshipType =
                    allRelationshipTypes[i];
                    Asset otherAsset = repository.assetRead(authToken, 569);
                    //569= MY_OTHER_ASSET_ID
                    //MY_OTHER_ASSET_ID should be an integer and should be
                    the id of an asset in the repository
                    //add this asset to the list of related assets
                    long[] oldSecondaryIDs =
                    myRelationshipType.getSecondaryIDs();
```
```
long[] newSecondaryIDs = new long[oldSecondaryIDs.length + 1];
for (int j = 0; j < oldSecondaryIDs.length; j++) {
    newSecondaryIDs[j] = oldSecondaryIDs[j];
}
newSecondaryIDs[newSecondaryIDs.length - 1] = otherAsset.getID();
myRelationshipType.setSecondaryIDs(newSecondaryIDs);
myAsset.setRelationshipTypes(allRelationshipTypes);
repository.assetUpdate(authToken, myAsset);
} catch (OpenAPIException e) {
    System.out.println("ServerCode = "+
    e.getServerErrorCode());
    System.out.println("Message = "+ e.getMessage());
    System.out.println("StackTrace:");
    e.printStackTrace();
} catch (RemoteException e) {
    e.printStackTrace();
} catch (ServiceException e) {
    e.printStackTrace();
} catch (MalformedURLException e) {
    e.printStackTrace();
}

/**
 * This method returns every relationship type in the repository
 * @param repository
 * @param authToken
 * @return
 * @throws RemoteException
 */
public static RelationshipType[] getAllRelationshipTypes(FlashlineRegistry
    repository, AuthToken authToken) throws RemoteException {
    //Create an empty relationship type criteria object
    RelationshipTypeCriteria criteria = new RelationshipTypeCriteria();
    criteria.setNameCriteria("");
    RelationshipType[] allRelationshipTypes =
    repository.relationshipTypeQuery(authToken, criteria);
    return allRelationshipTypes;
}

---

**Note:** Methods to Avoid - SetPromptNotifySecondary()

### 23.2.3 Use Case: Query related assets

**Description**
Querying for related asset types.

**Sample Code is as follows:**
```java
package com.flashline.sample.relationshiptypeapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
```
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.RelationshipType;
import com.flashline.registry.openapi.query.RelationshipTypeCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class FindRelationshipTypeAndUseInAsset {
    public static void main(String[] pArgs) throws OpenAPIException, RemoteException, ServiceException {
        try{
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            Asset myAsset = repository.assetRead(authToken, 563);
            // MY_OTHER_ASSET_ID should be an integer and should be the id of an asset in the repository
            RelationshipType[] allRelationshipTypes = getAllRelationshipTypes(repository, authToken);
            for (int i = 0; i < allRelationshipTypes.length; i++) {
                if (allRelationshipTypes[i].getName().equals("MyRelationshipType2")) {
                    // This is the relationship type, modify the assets that are related
                    // using it
                    RelationshipType myRelationshipType = allRelationshipTypes[i];
                    Asset otherAsset = repository.assetRead(authToken, 569);
                    // MY_OTHER_ASSET_ID should be an integer and should be the id of an asset in the repository
                    // add this asset to the list of related assets
                    long[] oldSecondaryIDs = myRelationshipType.getSecondaryIDs();
                    oldSecondaryIDs = new long[oldSecondaryIDs.length + 1];
                    for (int j = 0; j < oldSecondaryIDs.length; j++) {
                        oldSecondaryIDs[j] = newSecondaryIDs[j];
                    }
                    newSecondaryIDs[newSecondaryIDs.length - 1] = otherAsset.getID();
                    myRelationshipType.setSecondaryIDs(newSecondaryIDs);
                    myAsset.setRelationshipTypes(allRelationshipTypes);
                    repository.assetUpdate(authToken, myAsset);
                }
            }
            repository.assetUpdate(authToken, myAsset);
        }catch(OpenAPIException lEx) {
            System.out.println("ServerCode = "+ lEx.getServerErrorCode());
            System.out.println("Exception Code = "+ lEx.getExceptionCode());
        }
    }

    public static RelationshipType[] getAllRelationshipTypes(FlashlineRegistry repository, AuthToken authToken) {
        // Code to get all relationship types
    }
}
System.out.println("Message = " + lEx.getMessage());
System.out.println("StackTrace:");
lEx.printStackTrace();
}
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
}

/**
 * This method returns every relationship type in the repository
 * @param repository
 * @param authToken
 * @return
 * @throws RemoteException
 */
public static RelationshipType[] getAllRelationshipTypes(FlashlineRegistry repository, AuthToken authToken) throws RemoteException {
    //Create an empty relationship type criteria object
    RelationshipTypeCriteria criteria = new RelationshipTypeCriteria();
    criteria.setNameCriteria(""");
    RelationshipType[] allRelationshipTypes = repository.relationshipQuery(authToken, criteria);
    return allRelationshipTypes;
}
}

Example of the RelationshipTypeQuery

try {
    RelationshipTypeCriteria rCriteria = new RelationshipTypeCriteria();
    RelationshipType[] allRelationshipTypes = FlashlineRegistry.relationshipQuery(lAuthToken, rCriteria);
} catch (OpenAPIException e) {
    e.printStackTrace();
} catch (RemoteException re) {
    re.printStackTrace();
}
This chapter provides an overview of Role API and describes the use cases using this API.

This chapter contains the following sections:

- Section 24.1, "Overview"
- Section 24.2, "Use Cases"

24.1 Overview

The Role Subsystem provides a Web Services-based mechanism that can be used to create, read, update, query, and otherwise manipulate Oracle Enterprise Repository Roles.

Related Subsystems

For more information, see Chapter 27, "User API".

Additional Import(s) Required

```java
import com.flashline.registry.openapi.entity.Role;
import com.flashline.registry.openapi.query.RoleCriteria;
```

24.2 Use Cases

This section describes the use cases using the Role API. It contains the following topics:

- Section 24.2.1, "Use Case: Manipulate Roles"

24.2.1 Use Case: Manipulate Roles

Description

- Create a new role
- Read a role
- Update a role
- Delete a role
- Query for roles
Sample code is as follows:

```java
package com.flashline.sample.roleapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Role;
import com.flashline.registry.openapi.query.RoleCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class Roles {
  public static void main(String pArgs[]) throws OpenAPIException,
  RemoteException,
  ServiceException {
    try {
      // Connect to Oracle Enterprise Repository
      URL lURL = null;
      lURL = new URL(pArgs[0]);
      FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
      .getFlashlineRegistry(lURL);
      // Authenticate with OER
      AuthToken authToken = repository.authTokenCreate(pArgs[1],
      pArgs[2]);
      // Create a new role
      String lName = 'new_role_type_name';
      String lDesc = 'new_role_type_desc';
      boolean lDeafultForNewUser = true;
      Role lRole = null;
      lRole = repository.roleCreate(authToken, lName, lDesc,
      lDeafultForNewUser);
      // Read a Role
      String lRoleName = lName;
      Role lRole2 = null;
      lRole2 = repository.roleRead(authToken, lRoleName);
      // Update a Role
      String lRoleName3 = lName;
      Role lRole3 = null;
      lRole3 = repository.roleRead(authToken, lRoleName3);
      lRole3.setName('user_modified');
      lRole3.setStatus(20);
      lRole3 = repository.roleUpdate(authToken, lRole);
      // Delete a Role
      String lRoleName4 = 'user_modified'; // role name must exist in OER
      Role lRole4 = repository.roleRead(authToken, lRoleName4);
      if (lRole4==null) {
        lRole4 = repository.roleRead(authToken, lName);
      }
      if (lRole4==null) {
    }
```
try {
    repository.roleDelete(authToken, lRole4.getName());
} catch (OpenAPIException e) {
    e.printStackTrace();
}

// -----------------------------------------

// This method is used to query for roles.
Role[] lRoles = null;
RoleCriteria lRoleCriteria = null;
lRoleCriteria = new RoleCriteria();
lRoleCriteria.setNameCriteria("user");
lRoles = repository.roleQuery(authToken, lRoleCriteria);
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message    = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
This chapter provides an overview of Subscriptions API and describes the use cases using this API.

This chapter contains the following sections:

- Section 25.1, "Overview"
- Section 25.2, "Use Cases"

25.1 Overview

The subscriptions API provides a mechanism for users to manage the assets to which a user is subscribed. Subscription, in this context, refers specifically to email subscriptions. Subscriptions created through this API are the equivalent of users clicking the Subscribe button on the asset detail page. Once a user subscribes to an asset, they will be notified via email of events occurring on the asset. For a list of events for which subscribed users are notified, see the "Email Templates" section in Oracle Fusion Middleware User Guide for Oracle Enterprise Repository.

Using the subscriptions API of REX, developers can create, delete, and inspect subscriptions to lists of assets. The operations are always performed for the user identified in the authentication token passed as an argument to the various subscription methods.

25.2 Use Cases

This section describes the use cases using the Subscriptions API. It contains the following topics:

- Section 25.2.1, "Use Case: Create Subscription to Assets"
- Section 25.2.2, "Use Case: Delete Subscription to Assets"
- Section 25.2.3, "Use Case: Read Subscriptions for Assets"
- Section 25.2.4, "Use Case: Read Users Subscribed to an Asset"

25.2.1 Use Case: Create Subscription to Assets

**Description**

- Authenticate with REX.
- Read a list of asset summaries via a query.
- Subscribe to the matched assets.
Sample code is as follows:

```java
package com.flashline.sample.subscriptionapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetSummary;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class CreateSubscription {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                .getFlashlineRegistry(lURL);
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // find the assets to which to subscribe
            AssetCriteria criteria = new AssetCriteria();
            criteria.setNameCriteria("%"); AssetSummary[] lAssetSummaries = repository.assetQuerySummary(authToken, criteria);
            // Iterate through assets, pulling out the ids and adding
            // to the array of longs
            long[] lAssetIDs = new long[lAssetSummaries.length];
            for (int i = 0; i < lAssetSummaries.length; i++) {
                lAssetIDs[i] = lAssetSummaries[i].getID();
            }
            // Create the subscriptions. The value of "false" for the
            // parameter pFailOnAnyError, will cause the operation to NOT
            // fail for any asset to which the user does not have VIEW
            // privileges, or for which the asset is not subscribable.
            // If this value is not "false", the operation will throw
            // an exception if any asset in the array of asset IDs is
            // not subscribable or viewable by the user, and NONE of the
            // subscriptions will be recorded in the repository.
            repository.subscriptionCreate(authToken, lAssetIDs, false);
        }
        catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message    = " + lEx.getMessage());
            System.out.println("StackTrace:");
            lEx.printStackTrace();
        }
    }
}
```

25.2.2 Use Case: Delete Subscription to Assets

Description
- Authenticate with REX.
- Read a list of asset summaries via a query.
- Delete any subscriptions that may exist for the matched assets.

Sample Code as follows:
```java
package com.flashline.sample.subscriptionapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetSummary;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetSummary;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class DeleteSubscription {
    public static void main(String[] args) throws OpenAPIException,
    RemoteException,
    ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL url = new URL(args[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().
            getFlashlineRegistry(url);
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(
                args[1], args[2]);
            // find the assets for which to delete subscriptions
            AssetCriteria criteria = new AssetCriteria();
            criteria.setNameCriteria("%");
            AssetSummary[] assetSummaries = repository.assetQuerySummary(authToken,
                criteria);
            // Iterate through assets, pulling out the ids and adding
25.2.3 Use Case: Read Subscriptions for Assets

**Description**
- Authenticate with REX.
- Read the list of subscribed assets for the authenticated user.

**Sample Code is as follows:**
```java
package com.flashline.sample.subscriptionapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ReadSubscriptions {
    public static void main(String pArgs[]) throws OpenAPIException, RemoteException,
    ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().
                getFlashlineRegistry(lURL);
            // Delete the subscriptions on the list of assets.
            repository.subscriptionDelete(authToken, lAssetIDs);
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message = " + lEx.getMessage());
            System.out.println("StackTrace:");
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            lEx.printStackTrace();
        } catch (ServiceException lEx) {
            lEx.printStackTrace();
        } catch (MalformedURLException lEx) {
            lEx.printStackTrace();
        }
    }
}
```
25.2.4 Use Case: Read Users Subscribed to an Asset

Description

- Authenticate with REX.
- Read the list of users subscribed to a particular asset.

Sample Code is as follows:

class ReadSubscribersToAsset {
    public static void main(String[] pArgs) {
        try {
            // Login to OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            // Read all of the assets to which the user is subscribed.
            long[] lSubscribedAssets = repository.subscriptionReadSubscribedAssets(authToken);
            // Print out the assets to which the user is subscribed
            Asset[] lAssets = repository.assetReadArray(authToken, lSubscribedAssets);
            System.out.println("Subscribed Assets for user "+pArgs[1]);
            for(int i=0; i<lAssets.length; i++){
                System.out.println("  -> "+lAssets[i].getLongName());
            }
        } catch (OpenAPIException lEx) {
            System.out.println("ServerCode = " + lEx.getServerErrorCode());
            System.out.println("Message    = " + lEx.getMessage());
            System.out.println("StackTrace:");
            lEx.printStackTrace();
        } catch (RemoteException lEx) {
            lEx.printStackTrace();
        } catch (ServiceException lEx) {
            lEx.printStackTrace();
        } catch (MalformedURLException lEx) {
            lEx.printStackTrace();
        }
    }
}

package com.flashline.sample.subscriptionapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AssetSummary;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.query.AssetCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class ReadSubscribersToAsset {
try {
    // Connect to Oracle Enterprise Repository
    URL lURL = null;
    lURL = new URL(pArgs[0]);
    FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
        .getFlashlineRegistry(lURL);
    // Login to OER
    AuthToken authToken = repository.authTokenCreate(
        pArgs[1], pArgs[2]);
    // Assume that this query will return some number of assets...
    AssetCriteria lCriteria = new AssetCriteria();
    AssetSummary[] lAssetSummaries = repository.assetQuerySummary(authToken, lCriteria);
    // Read the users that are subscribed to the first asset
    RegistryUser[] lSubscribedUsers = repository.subscriptionReadUsersSubscribedToAsset(authToken,
        lAssetSummaries[0].getID());
    for (int i=0; i<lSubscribedUsers.length; i++) {
        System.out.println("Subscribed Users: "+lSubscribedUsers[i].getUserName());
    }
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
This chapter provides an overview of System Settings API and describes the use cases using this API.

This chapter contains the following sections:
- Section 26.1, "Overview"
- Section 26.2, "Use Cases"

### 26.1 Overview

Within the Oracle Enterprise Repository’s System Settings section administrators can configure the basic operations and enable/disable specific features. The System Settings API provides a mechanism to query these system settings.

---

**Note:** Users are allowed only to query the system settings for values, the system settings cannot be set or modified through REX.

---

To query the system settings, the following package import(s) are required:

```java
import com.flashline.registry.openapi.entity.SettingValue;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.query.SystemSettingsCriteria;
```

**Reserved Methods**

The `systemSettingsAddBundle` method is reserved for future use and is not intended for general use.

### 26.2 Use Cases

This section describes the use cases using the System Settings API. It contains the following topics:
- Section 26.2.1, "Use Case: Query for System Settings"

#### 26.2.1 Use Case: Query for System Settings

**Description**
Query for system settings in REX.
Sample code is as follows:

```java
package com.flashline.sample.systemsettingsapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.SettingValue;
import com.flashline.registry.openapi.query.SystemSettingsCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class SystemSettings {
    public static void main(String pArgs[]) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new
            //Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
            //Set Application Token on AuthToken object. This is supplied by OER
            //authToken.setApplicationToken("TokenString");
            //Read all available system settings
            SystemSettingsCriteria lCriteria = new SystemSettingsCriteria();
            lCriteria.setNameCriteria("enterprise.defaults.displayname.field");
            SettingValue[] lValues = repository.systemSettingsQuery(authToken,
            lCriteria);
            for (int i = 0; i < lValues.length; i++) {
                System.out.println("Setting Name: " + lValues[i].getDescriptor().getName());
                System.out.println("Setting Value: " + lValues[i].getValue());
            }
            //Read a specific setting
            lCriteria.setNameCriteria("cmee.server.companyname");
            lValues = repository.systemSettingsQuery(authToken, lCriteria);
            for (int i = 0; i < lValues.length; i++) {
                System.out.println("Setting Name: " + lValues[i].getDescriptor().getName());
                System.out.println("Setting Value: " + lValues[i].getValue());
            }
            //Read a specific section
            lCriteria.setSectionCriteria("general");
            lValues = repository.systemSettingsQuery(authToken, lCriteria);
            for (int i = 0; i < lValues.length; i++) {
                System.out.println("Setting Name: " + lValues[i].getDescriptor().getName());
                System.out.println("Setting Value: " + lValues[i].getValue());
            }
            //Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1], pArgs[2]);
        }
    }
}
```
```java
System.out.println("Setting Value: " + lValue.getValue());
}
} catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
```
This chapter provides an overview of User API and describes the use cases using this API.

This chapter contains the following sections:

- Section 27.1, "Overview"
- Section 27.2, "Use Cases"

### 27.1 Overview

The User Subsystem provides a Web Services-based mechanism that can be used to create, read, update, query, and otherwise manipulate Oracle Enterprise Repository User accounts.

**Related Subsystem**

For more information, see Chapter 24, "Role API".

**Additional Import(s) Required**

```java
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.query.UserCriteria;
```

### 27.2 Use Cases

This section describes the use cases using the User API. It contains the following topics:

- Section 27.2.1, "Use Case: Manipulating Users"

#### 27.2.1 Use Case: Manipulating Users

**Description**

- Create a new user.
- Retrieve an existing user.
- Update a user.
- Deactivate a user.
- Query for users.
Sample code is as follows:

```java
package com.flashline.sample.userapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import java.util.Calendar;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.RegistryUser;
import com.flashline.registry.openapi.query.UserCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;

public class Users {
    public static void main(String[] pArgs) throws OpenAPIException,
            RemoteException,
            ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL lURL = null;
            lURL = new URL(pArgs[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator()
                    .getFlashlineRegistry(lURL);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(pArgs[1],
                    pArgs[2]);
            // Create a new user
            String lUserName = "testUserCreate"+
                    Calendar.getInstance().getTimeInMillis();
            String lFirstName = "testUserCreate_FirstName";
            String lLastName = "testUserCreate_LastName";
            String lEmail = lUserName+"@example.com";
            String lPassword = "testUserCreate_Password";
            boolean lMustChangePassword = false;
            boolean lPasswordNeverExpires = false;
            boolean lAssignDefaultRoles = true;
            RegistryUser RbacRegistrySecUser = repository.userCreate(
                    authToken, lUserName, lFirstName, lLastName, lEmail, lPassword,
                    lMustChangePassword, lPasswordNeverExpires, lAssignDefaultRoles);
            // Read a User
            long lId = 50000; // user id must exist in OER
            RegistryUser lUser1 = repository.userRead(authToken,
                    lId);
            // Update a User
            lUser1.setActiveStatus(10);
            lUser1.setUserName("xxx");
            lUser1.setPhoneNumber("412-521-4914");
            lUser1.setMustChangePassword(true);
            lUser1.setPasswordNeverExpires(false);
            lUser1.setPassword("changed_password");
            lUser1.setEmail("newaddress@bea.com");
            try {
```
<User API>

```java
User1 = repository.userUpdate(authToken, User1);
) catch (OpenAPIException e) {
    e.printStackTrace();
}
// -----------------------------------------
// Deactivate a User
RegistryUser lUser2 = null;
try {
    lUser2 = repository.userDeactivate(authToken, lId);
) catch (OpenAPIException e) {
    e.printStackTrace();
}
// -----------------------------------------
// Query for Users
RegistryUser lUsers[] = null;
UserCriteria lUserCriteria = null;
lUserCriteria = new UserCriteria();
lUserCriteria.setNameCriteria("testname");
lUsers = repository.userQuery(authToken, lUserCriteria);
) catch (OpenAPIException lEx) {
    System.out.println("ServerCode = " + lEx.getServerErrorCode());
    System.out.println("Message   = " + lEx.getMessage());
    System.out.println("StackTrace:");
    lEx.printStackTrace();
} catch (RemoteException lEx) {
    lEx.printStackTrace();
} catch (ServiceException lEx) {
    lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}
```

```
```
This chapter provides an overview of Vendor API and describes the use cases using this API.

This chapter contains the following sections:

- Section 28.1, "Overview"
- Section 28.2, "Use Cases"

### 28.1 Overview

Vendors are the original source of assets, and are responsible for their support. Vendors are identified by a single name string.

Validation - When saving a Vendor, Oracle Enterprise Repository currently validates that:

- The vendor name has to be less than 250 characters
- The Vendor name is unique

**Related Subsystem**

There is a one to many relationship between assets and vendors (i.e. multiple assets can be linked to the same vendor, but an asset can only have one vendor). When creating or editing assets the Vendor ID metadata element linking the Vendor to the asset can also be modified.

**Additional Import(s) Required**

```java
import com.flashline.registry.openapi.entity.Vendor;
import com.flashline.registry.openapi.query.VendorCriteria;
```

### 28.2 Use Cases

This section describes the use cases using the Vendor API. It contains the following topics:

- Section 28.2.1, "Use Case: Manipulating Vendors"

#### 28.2.1 Use Case: Manipulating Vendors

**Description**

- Adding a new Vendor to Oracle Enterprise Repository.
Assigning an existing Vendor to an asset.

Sample code is as follows:

```java
package com.flashline.sample.vendorapi;
import java.net.MalformedURLException;
import java.net.URL;
import java.rmi.RemoteException;
import javax.xml.rpc.ServiceException;
import com.flashline.registry.openapi.base.OpenAPIException;
import com.flashline.registry.openapi.entity.Asset;
import com.flashline.registry.openapi.entity.AuthToken;
import com.flashline.registry.openapi.entity.Vendor;
import com.flashline.registry.openapi.query.VendorCriteria;
import com.flashline.registry.openapi.service.v300.FlashlineRegistry;
import com.flashline.registry.openapi.service.v300.FlashlineRegistryServiceLocator;
public class Vendors {
    public static void main(String[] args) throws OpenAPIException, RemoteException, ServiceException {
        try {
            // Connect to Oracle Enterprise Repository
            URL url = null;
            url = new URL(args[0]);
            FlashlineRegistry repository = new FlashlineRegistryServiceLocator().getFlashlineRegistry(url);
            // Authenticate with OER
            AuthToken authToken = repository.authTokenCreate(args[1], args[2]);
            // Create a new vendor
            String newVendorName = "My Vendor";
            Vendor newVendor = repository.vendorCreate(authToken, newVendorName);
            System.out.println("The new vendor id =" + newVendor.getID());
            // Find a vendor and update an asset to use it
            VendorCriteria criteria = new VendorCriteria();
            criteria.setNameCriteria(newVendorName);
            Vendor[] vendors = repository.vendorQuery(authToken, criteria);
            long myVendorID = vendors[0].getID();
            long MY_ASSET_ID = 569;
            Asset myAsset = repository.assetRead(authToken, MY_ASSET_ID);
            myAsset.setVendorID(myVendorID);
            repository.assetUpdate(authToken, myAsset);
            // clean up
            myAsset.setVendorID(0);
            repository.vendorDelete(authToken, newVendor.getID());
        } catch (OpenAPIException ex) {
            System.out.println("ServerCode = " + ex.getServerErrorCode());
            System.out.println("Message = " + ex.getMessage());
            System.out.println("StackTrace:");
            ex.printStackTrace();
        } catch (RemoteException ex) {
            ex.printStackTrace();
        } catch (ServiceException ex) {
            // handle exception
        }
    }
}
```
lEx.printStackTrace();
} catch (MalformedURLException lEx) {
    lEx.printStackTrace();
}

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