Using Axon Data Governance with Enterprise Data Catalog
Abstract

Use Axon Data Governance with Enterprise Data Catalog to view the links to technical enterprise assets in systems, glossaries, and data sets. This article describes about deploying Enterprise Data Catalog with Axon and working with the Enterprise Catalog data in the Axon application.

Supported Versions

- Informatica Axon 5.2

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Overview

Axon Data Governance with Enterprise Data Catalog delivers an enterprise data governance solution that enables your organization to trust and verify the data governance policies. This integrated solution helps drive the collaboration required between the business and technical users to provide the right experience for the right user.

Data is a strategic asset that the business organizations use as a source for innovation and digital transformation. For a successful transformation, you need data to chart and track the changes and data governance to bring the cross-functional organizations along together. You can add more intelligence to data governance by combining metadata management capabilities with the automation power of machine learning and artificial intelligence. With the combination of Informatica Axon, Enterprise Data Catalog, and Informatica CLAIRE, you can apply intelligent data governance capabilities that improve the productivity, efficiency, and accuracy of your organization.

You can associate Axon objects with Enterprise Data Catalog assets. You can access the technical assets and their lineage associated with the business-user facing Axon objects from Enterprise Data Catalog. Axon uses Informatica CLAIRE to recommend attributes to which you can link the fields. Web users can view technical assets in Axon systems, glossaries, and data sets.

Benefits of Integrated Solution

The integration of Axon with Enterprise Data Catalog has the following benefits:

Artificial-Intelligence-Assisted Discovery and Cataloging

When a policy analyst defines critical data elements, Axon recommends the underlying physical assets, the underlying physical data sets, and domains that map to the critical data element. The assisted catalog
enables rapid connection of the conceptual policies and their application to the underlying physical systems. A process that would have taken weeks to months can be done in days.

Without the integration, you had to define the policy first and then align it with all the stakeholders. Then, you had to search for the system of records where the data resides.

After integration, you get recommendations from all systems that have the type of data that you are looking for, and the analyst needs to select the ones that match the criteria. The analyst can decide based on the quality of data, the completeness of data, and the consumers of data such as some analysts, the CFO of an organization. All these factors have an impact of whether the data you are looking at is the data that you want to report against.

**Business and Technical Lineage Automation**

The combination of Enterprise Data Catalog and Axon enables scanning assets to determine the technical lineage of specific data and expose the details in a business relevant context for a policy analyst to understand and document. Otherwise, documenting a business lineage map might take several months. By the time you complete the lineage map, the map might be obsolete because the underlying data flow has changed.

With automation, the time taken to document a business flow is reduced. You can keep the lineage maps up-to-date as the underlying data flows change over time ensuring all data consumers have easy access and the latest information.

**Benefits**

Due to the artificial intelligence assisted discovery and automation, you can use Axon to perform different tasks to govern your data.

A data governance officer can perform the following tasks in Axon:

- Find and use data assets for immediate business impact.
- View the complete and accurate business view of lineage for the compliance and regulatory needs.
- Gain quick access to the technical lineage or metadata.
- Reduce effort for the stakeholders to discover and on-board business model in Axon.

A data steward can perform the following tasks in Axon:

- Reduce effort by intelligent matching and inference.
- Enhance value by enabling collaboration and crowd sourcing across data stores.

**Deploying Enterprise Data Catalog with Axon**

To deploy Enterprise Data Catalog with Axon, you need to configure certain advanced settings when you install Axon. Provide the machine details of your Enterprise Data Catalog deployment when you install Axon. Ensure that you perform the pre-installation and post-installation tasks to deploy Enterprise Data Catalog with Axon.

**Pre-Installation Checklist**

Before you run the Axon installer, keep the details of the Enterprise Data Catalog deployment ready. Make sure that you verify the following checklist items:

**Port Requirements**

The default port number for Enterprise Data Catalog is 9085. Verify that the port number is available before you install Axon.
Host Names
In the system where you want to install Axon, map the host names and IP addresses of machines that has
Enterprise Data Catalog installed. Add the IP address and domain name for Enterprise Data Catalog in the
hosts file in the following location:
/etc/hosts

Domain Details
Axon can discover and retrieve enterprise metadata from Enterprise Data Catalog. To integrate Axon with
Enterprise Data Catalog, you must provide the following details of your Enterprise Data Catalog installation:

- Enterprise Data Catalog server URL
- Port number
- User name and password
- User security domain
- Axon Resource name

Note: You cannot install Axon on the same server where the Hadoop cluster for Enterprise Data Catalog is installed.

Configure Enterprise Data Catalog

You can configure Enterprise Data Catalog either when you install Axon or after you install Axon. If you want to
configure Enterprise Data Catalog when you install Axon, you need to type "1" after you specify the Tomcat port number
in the advanced configuration.

Enter values for the following parameters of the Enterprise Data Catalog installation:

- Enterprise Data Catalog URL in the following format: http(s):/<host_name>
- Enterprise Data Catalog port number. Press the Enter key to proceed with the default port.
- Enterprise Data Catalog user name
- Enterprise Data Catalog password
- Enterprise Data Catalog user security domain
- Enterprise Data Catalog resource name for your Axon installation

Post-Installation Tasks

After you install Axon, perform the following post-installation tasks:

- Configure access to Enterprise Data Catalog if you skipped installing it in the advanced configuration when
you installed Axon.
- Connect to an SSL-Enabled Enterprise Data Catalog instance, if Enterprise Data Catalog is SSL-enabled, to
display the objects in Axon facets.

Configure Access to Enterprise Data Catalog

If you selected the advanced configuration option during Axon installation, you would have entered the configuration
settings for Enterprise Data Catalog. If you did not select advanced configuration during Axon installation or if you want
to update the connection settings for Enterprise Data Catalog after the installation, go to the Axon Admin Panel.

You must have the Super Admin profile to perform this task.

1. From the Axon toolbar, click the Admin Panel menu item under your user name.
2. In the menu on the left, under the Customize & Configure category, click Configure Axon.
3. In the **Group** dropdown, select **Enterprise Data Catalog**.

4. Click **Edit**, and configure the following properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise Data Catalog Server Host</td>
<td>URL of the Enterprise Data Catalog service in the following format: http(s):/&lt;host_name&gt; or http(s):/&lt;IP_address&gt;</td>
</tr>
<tr>
<td>Enterprise Data Catalog Server Port</td>
<td>Port number of the Enterprise Data Catalog service</td>
</tr>
<tr>
<td>Enterprise Data Catalog Server Login User Name</td>
<td>User name to log in to Enterprise Data Catalog server</td>
</tr>
<tr>
<td>Enterprise Data Catalog Server Login Password</td>
<td>Password to log in to Enterprise Data Catalog server</td>
</tr>
<tr>
<td>Enterprise Data Catalog Server Login Namespace</td>
<td>User security domain of Enterprise Data Catalog server</td>
</tr>
<tr>
<td>Enterprise Data Catalog Axon Resource Name</td>
<td>Resource name in Enterprise Data Catalog that is configured to connect to your specific Axon application</td>
</tr>
</tbody>
</table>

5. Click **Save**.

6. In the Linux environment, run the following command to clear the contents of the cache directory:
   ```bash
   rm -rf <INSTALLATION_DIRECTORY>/axonhome/axon/app/cache/*
   ```

7. Run the following command to restart the Memcached service:
   ```bash
   <INSTALLATION_DIR>/axonhome/third-party-app/scripts/memcached restart
   ```

8. Run the following command to restart the HTTPD service:
   ```bash
   service httpd restart
   ```

**Note:** When you clear the cache and restart the Memcached and HTTPD services, the Axon web interface might be disrupted for some users that are logged into Axon. Informatica recommends that you update the cache after you save your changes in all the **Configure Axon** pages. Additionally, perform this action during a maintenance period when very few users are using Axon.

### Connect to an SSL-Enabled Enterprise Data Catalog Instance

To connect Axon to an instance of Enterprise Data Catalog that has SSL enabled, you must upgrade cURL and the related libraries after you install Axon. Else, the facets in Axon will not display objects.

Run the following command to check the existing version of cURL and the related libraries:
```bash
curl -V
```

Run the following yum command to upgrade cURL:
```bash
yum upgrade curl
```

Run the following yum command to upgrade Network Security Services (NSS):
```bash
yum upgrade nss
```

Run the following command to verify the version of NSS after upgrade:
```bash
rpm -qa | grep nss
```
After you run the `rpm -qa | grep nss` command, make sure that the output displays the following libraries:

```
nss-sysinit-3.21.0-17.el7.x86_64
nss-tools-3.21.0-17.el7.x86_64
nss-util-3.21.0-2.2.el7_2.x86_64
nss-3.21.0-17.el7.x86_64
```

You can connect to an SSL enabled instance of Enterprise Data Catalog if the console displays the following information after you run the command:

```
curl 7.29.0 (x86_64-redhat-linux-gnu) libcurl/7.29.0 NSS/3.21 Basic ECC zlib/1.2.7 libidn/1.28
libssh2/1.4.3
Protocols: dict file ftp ftps gopher http https imap imaps ldap ldaps pop3 pop3s rtsp scp sftp smtp
smtsp telnet tftp
Features: AsynchDNS GSS-Negotiate IDN IPv6 Largefile NTLM NTLM_WB SSL libz unix-sockets
```

**Working with Enterprise Data Catalog in Axon**

After deploying Enterprise Data Catalog with Axon, Axon fetches Enterprise Data Catalog resources and fields and displays them in the Axon application. Users with the admin profile can view enterprise metadata in the Resources and Fields facets under Enterprise Catalog.

You can link Enterprise Data Catalog resources to one or more Axon systems. Axon associates systems and resources and displays the linked resources in the Enterprise Catalog tab when you open a system object.

Axon communicates with Enterprise Data Catalog through internal REST API requests and responses. Axon extracts the resources and fields information from Enterprise Data Catalog. Enterprise Data Catalog extracts glossaries from Axon.

**Enterprise Catalog Facets**

Users with an administrator profile can view a list of resources from Enterprise Data Catalog in the Resources facet and fields data in the Fields facet under Enterprise Catalog. Web users can view field information in attributes and resource information in System and Glossary objects.

Axon displays enterprise metadata in the following facets:

**Resources Facet**

A resource is an Enterprise Data Catalog object that represents an external data source or metadata repository from where scanners extract metadata. Scanners in Enterprise Data Catalog fetch the metadata from resources. Enterprise Data Catalog performs basic metadata operations, such as extraction, storage, and management of metadata at the resource level. Axon displays resources from the relational sources, file systems such as Amazon S3, Native, and HDFS, and Salesforce application from Enterprise Data Catalog.

You can link resources with systems. You can use an existing system or create a system.
The following image shows a sample list of Enterprise Catalog resources:

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Description</th>
<th>Type</th>
<th>Linked Axon Systems</th>
<th>Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>AzureSQLServer</td>
<td>Azure Microsoft SQL Server</td>
<td></td>
<td></td>
<td>2018-01-04 8:30:19 AM</td>
</tr>
<tr>
<td>HDFS_non_relation</td>
<td>XML</td>
<td>HDFS</td>
<td></td>
<td>2018-02-13 7:08:38 AM</td>
</tr>
<tr>
<td>S3</td>
<td>Amazon S3</td>
<td></td>
<td></td>
<td>2018-02-14 11:12:45 AM</td>
</tr>
<tr>
<td>Salesforce</td>
<td>Salesforce</td>
<td></td>
<td></td>
<td>2018-03-01 6:41:02 AM</td>
</tr>
<tr>
<td>FileSystem</td>
<td>File System</td>
<td></td>
<td></td>
<td>2018-02-20 4:43:46 AM</td>
</tr>
<tr>
<td>Oracle</td>
<td>Oracle</td>
<td></td>
<td></td>
<td>2017-04-02 9:16:05 AM</td>
</tr>
</tbody>
</table>

The **Resources** facet displays the following information in a tabular format:

- Resource Name
- Description
- Type
- Linked Axon Systems
- Created

The **Resource Name** column contains the hyperlink to the resources in Enterprise Data Catalog. The **Linked Axon Systems** column displays information after you link systems to resources. All other columns display information that Axon fetches from Enterprise Data Catalog.

You can filter the information in the **Resources** facet by filter type. You can search by resource name and narrow down your search by the uploaded or updated date. The created date is in the **YYYY/MM/DD HH:MM:SS** format.

**Fields Facet**

After you link systems to resources, Axon displays fields from the linked resources in the **Fields** facet. You can link fields with attributes of a data set. Informatica CLAIRE recommends attributes of the data set that you can link the fields to.
The following image shows a sample list of Enterprise Catalog columns:

![Enterprise Catalog Columns](image)

The **Fields** facet displays the following information in a tabular format:

- Name
- Type
- Parent Name
- Resource Name
- Status
- Linked Glossary
- Inferred Glossary

You can view the following types of Enterprise Catalog fields in Axon: Column, JSON Field, XML Field, CSV Field, and Salesforce Field.

In the **Linked Glossary** column, you can view the Axon glossaries that you linked to fields in Enterprise Data Catalog.

In the **Inferred Glossary** column, you can view the Axon glossaries that are linked to data domains in Enterprise Data Catalog. Enterprise Data Catalog can discover more than one field for a data domain during the data discovery process. If the data domain has a single field or multiple fields associated with the data domain, all the fields appear in the **Fields** facet with the same Axon glossary name listed in the **Inferred Glossary** column. If the data domains are curated in Enterprise Data Catalog, you can view a green tick sign along with the glossary name. If the data domains are not curated in Enterprise Data Catalog, you can view the percentage of match along with glossary name.

Click the name, parent name, and resource name links in the facet to launch Enterprise Data Catalog and view more information about each item.

You can create an Axon resource in Catalog Administrator. For more information on the resource-related task that you need to perform in Enterprise Data Catalog, see the Axon Resource Properties topic in the **Catalog Administrator Guide**.

You can run a profile on resources in Enterprise Data Catalog and identify fields from the profile results that match data domains. You can link those data domains to Axon glossaries in Enterprise Data Catalog. If you link fields to a data domain in Enterprise Data Catalog, the fields appear on the **Fields** facet with the associated glossary name displayed in the **Inferred Glossary** column.

You can filter the information in the **Fields** facet by status type. You can search by field name, parent name, linked glossary, or inferred glossary, and narrow down the search by selecting resources to search in.
Link Resources with Systems

Link Enterprise Data Catalog resources with Axon systems to view the resources in the Fields facet in Axon. You can add an existing system or create a system. You must have an admin profile to view the Resources facet. You must have an Enterprise Data Catalog account to view the resource details.

1. From the Axon toolbar, click Enterprise Catalog to view the Resources facet.
2. Review the resource details and select the rows that you want to link to Axon systems. To make multiple selections, hold the control key and click every row that you want to include.
3. Right-click a row and click Manage Linking.

   - The Link Axon System(s) dialog box opens.
   - The following image shows the sample linking of an Enterprise Catalog resource to different systems:

   ![Link Axon System(s) dialog box](image)

4. In the System Name column, start typing the name of the system that you want to link to the rows that you selected.
   - Axon starts suggesting systems based on the keywords that you type.
5. Select the system from the list of suggestions that Axon makes.
   - Axon updates the Description and Type columns with information about the system that you selected.
6. Optionally, click Create to create a system.
   - a. Configure the required properties.
   - b. Click Save.
7. Optionally, click the + icon to add a row and link another system. You can add multiple systems to Enterprise Data Catalog resources.
8. Optionally, click the X icon to delete a row and remove an existing link.
9. Click Save.

Note: Axon lists a resource in the Resources facet even if you save the resource without running it or purge the resource in Enterprise Data Catalog. If you link the resource to a system, the Fields facet does not list the corresponding fields.

Link Fields with Attributes

Link fields in Enterprise Data Catalog to data set attributes in Axon. You must have one of the administrator profile to view the Fields facet. You can set the status of fields that are not relevant to Ignore.

1. From the Axon toolbar, click Enterprise Catalog to view the Fields facet.
2. Review the field details and select the rows that you want to link to attributes in data sets. To make multiple selections, hold the control key and click the rows that you want to include.
3. Right-click a row and click Manage Linking. Optionally, click the drop-down menu next to the Search button and click Manage Linking.
The **Link Axon Attribute(s)** dialog box opens. The following image shows the sample linking of fields to the attributes of a data set:

![](image)

4. In the **Associate to** field, select a data set attribute that you want to link the field. Informatica CLAIRE recommends attributes of the selected data set that you can link the fields to. You can also view the list of data set attributes available in Axon.

5. Optionally, click **Create** to create a data set.
   a. In the **Create a Data Set** dialog box, specify values for the required properties.
   b. Click **Save**.

6. From the **Type** dropdown, select the link type.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>Select an existing attribute of the data set.</td>
</tr>
<tr>
<td>New from Field</td>
<td>Create an attribute from the field information.</td>
</tr>
</tbody>
</table>

7. Based on the type of link, Axon updates the **Attribute**, **Definition**, and **Glossary** columns.
   If you select **New from Field**, Informatica CLAIRE recommends a list of glossaries that you can associate with the attribute.

8. Optionally, click the + icon to associate a new attribute to a field.

9. Optionally, click the X icon to unlink the Axon data set attribute and the Enterprise Data Catalog field.

10. Click **Save**.
    To view a field from Enterprise Data Catalog that you linked to an attribute, navigate to **Linked Fields** on the **Attributes** tab of a **Data Set** facet. In the **Relationships** tab of a **Data Set** facet, you can click **Show Recommendations** to view the related attributes that Axon recommends for possible linking with fields. Axon displays attribute recommendations only if the associated fields are interlinked in Enterprise Data Catalog.

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Acknowledgements

The author would like to acknowledge the Development and Quality Assurance teams for their technical assistance.