Apache Directory
Studio Schema Editor
User's Guide
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Chapter I. Getting started

This part of the guide provides you a sum up of the basic concepts of the Schema Editor Plugin.

1. Download and installation

The latest version of Apache Directory Studio can be downloaded from the Apache Directory Studio Downloads page, at this address: https://directory.apache.org/studio/downloads.html.

The download page also includes the installation instructions.

2. Views

2.1. Hierarchy view

The Hierarchy view shows the hierarchy of an element (attribute type or object class).

Here is what the Hierarchy view looks like:

![Hierarchy View](image)

**Toolbar**

The toolbar of the Hierarchy view contains the following actions:

- Show the Type Hierarchy: Shows the type hierarchy.
- Show the Supertype Hierarchy: Shows the supertype hierarchy.
- Show the Subtype Hierarchy: Shows the subtype hierarchy.
- Link with Editor: Links the view with the editor.

**Menu**

The menu of the Hierarchy view contains the following actions:
Getting started

- Show the Type Hierarchy: Shows the type hierarchy.
- Show the Supertype Hierarchy: Shows the supertype hierarchy.
- Show the Subtype Hierarchy: Shows the subtype hierarchy.
- Link with Editor: Links the view with the editor.
- Preferences: Displays the preferences dialog for the Hierarchy view.

Icons

The following icons can appear in the Hierarchy view:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attribute type (operational)</td>
</tr>
<tr>
<td></td>
<td>Attribute type (user)</td>
</tr>
<tr>
<td></td>
<td>Object class (abstract)</td>
</tr>
<tr>
<td></td>
<td>Object class (auxiliary)</td>
</tr>
<tr>
<td></td>
<td>Object class (structural)</td>
</tr>
<tr>
<td></td>
<td>Attribute type (current selection)</td>
</tr>
<tr>
<td></td>
<td>Object class (current selection)</td>
</tr>
</tbody>
</table>

2.2. Problems view

The Problems view displays errors and warnings associated with a resource.

Here is what the Problems view looks like:

<table>
<thead>
<tr>
<th>Description</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attribute type with OID '1.3.6.1.1.3.3.1.1.5' already used by another item,</td>
<td></td>
</tr>
<tr>
<td>attribute type with alias adminmt</td>
<td></td>
</tr>
<tr>
<td>Attribute type with OID '1.3.6.1.1.3.3.1.1.5' already used by another item,</td>
<td></td>
</tr>
<tr>
<td>object class with alias memberNisNetGroup</td>
<td></td>
</tr>
<tr>
<td>Attribute type with OID '1.3.6.1.2.3.4.5' does not have any alias.</td>
<td>1.2.3.4.5</td>
</tr>
</tbody>
</table>

Icons

The following icons can appear in the Problems view:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>Warning</td>
</tr>
</tbody>
</table>

2.3. Projects view

The Projects view shows all the Schema projects of the workspace.

Here is what the Projects view looks like:
Getting started

Toolbar

The toolbar of the Projects view contains the following actions:

• - New Schema Project : Opens the New Schema Project wizard.

Icons

The following icons can appear in the Projects view:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Closed offline project</td>
</tr>
<tr>
<td></td>
<td>Opened offline project</td>
</tr>
<tr>
<td></td>
<td>Closed online project</td>
</tr>
<tr>
<td></td>
<td>Opened online project</td>
</tr>
</tbody>
</table>

2.4. Schema view

This Schema view shows all the schemas of the currently opened project.

The Schema view has two types of presentation:

• Flat (Default)

• Hierarchical

Here is what the Schema view looks like in flat presentation:

Here is what the Schema view looks like in hierarchical presentation:
Getting started

Toolbar

The toolbar of the Schema view contains the following actions:

• New Schema : Opens the New Schema wizard.
• New Attribute Type : Opens the New Attribute Type wizard.
• New Object Class : Opens the Object Class wizard.
• Collapse All : Collapse all the node of the tree.
• Link with Editor : Links the view with the editor.

Menu

The menu of the Schema view contains the following actions:

• Sorting... : Opens the Sorting dialog for this view.
• Schema Presentation
  • Flat : Displays the Schema in flat presentation.
  • Hierarchical : Displays the Schema in hierarchical presentation.
• Link with Editor : Links the view with the editor.
• Preferences : Opens the Preferences dialog for this view.

Icons

The following icons can appear in the Schema view:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🌟</td>
<td>Attribute type (operational)</td>
</tr>
<tr>
<td>🌟</td>
<td>Attribute type (user)</td>
</tr>
</tbody>
</table>
### 2.5. Search view

The Search view displays the results of a search.

Here is what the Search view looks like:

![Search view](image)

#### Toolbar

The toolbar of the Search view contains the following actions:

- ![Search Field](image) - *Show Search Field*: Shows the search field in the Search view.

- ![Current Search](image) - *Run the Current Search Again*: Runs the current search again.

- ![History](image) - *Search History*: This command allows you to browse previously conducted searches and repeat a previous search. You can select a previous search from the drop-down menu or clear the search history.

#### Menu

The menu of the Search view contains the following actions:

- ![Sort](image) - *Sorting...*: Opens the Sorting dialog for this view.

- ![Preferences](image) - *Preferences*: Opens the Preferences dialog for this view.

#### Icons

The following icons can appear in the Search view:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Attribute type" /></td>
<td>Attribute type (operational)</td>
</tr>
<tr>
<td><img src="image" alt="Attribute type" /></td>
<td>Attribute type (user)</td>
</tr>
<tr>
<td><img src="image" alt="Object class" /></td>
<td>Object class (abstract)</td>
</tr>
<tr>
<td><img src="image" alt="Object class" /></td>
<td>Object class (auxiliary)</td>
</tr>
<tr>
<td><img src="image" alt="Object class" /></td>
<td>Object class (structural)</td>
</tr>
</tbody>
</table>
3. Editors

3.1. Attribute type editor

The attribute type editor is the one-stop shop where you can define all aspects of your attribute type.

The Overview page is where the user can edit the properties of the attribute type.

User can edit:

- the name
- the OID
- the description
- the superior type
- the usage
- the syntax and syntax length
- if the attribute type is obsolete
- if the attribute type is single-value
- if the attribute type is collective
- if the attribute type is no-user-modification
- all the matching rules (equality, ordering, substring)
The Source code page is where the user can see the result of his actions in the Overview page and what source code will be generated in the schema file.
The **Used By** page is where the user can see in which object class(es) is used this attribute type (as mandatory or optional attribute type).

### 3.2. Object class editor

The object class editor is the one-stop shop where you can define all aspects of your object class.

The **Overview** page is where the user can edit the properties of the object class.

User can edit:

- the name
- the OID
- the description
- the superior class
- the class type
- if the object class is obsolete
- the mandatory attributes (add and remove)
- the optional attributes (add and remove)
The Source code page is where the user can see the result of his actions in the Overview page and what source code will be generated in the schema file.

3.3. Schema editor

The schema editor displays all the attribute types and the object classes that contains a schema file.
The Overview page is where the user can see all the attribute types and object classes of the schema.
The **Source Code** page is where the user can see all the attribute types and object classes of the schema in their OpenLDAP code representation.
Chapter II. Tasks

1. Creating a new project

To create a new project, in the Projects view toolbar, click on the **New Schema Project** button, or use the **Strg-R** shortcut.

The creation of a new Schema Project is a two-step process:

1. Define the name and the type of the project.

2. Select the 'core' schema files to import or select the directory server from which the schema should be imported.

Page 1

The first page allows you to enter a project name and select the type of project.

![Create a Schema project dialog](image)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the project. In the Projects view the empty project is listed with this name. The name must be unique.</td>
<td>empty</td>
</tr>
<tr>
<td>Type</td>
<td>The type of the project. Choose between Offline Schema and Online Schema from a Directory Server.</td>
<td>Offline Schema</td>
</tr>
</tbody>
</table>

Page 2 (offline)

The second page allows you to select the 'core' schema files to import.

12
Specify the type of server you want to work with and check the 'core' schema files you want to import.

2. Importing projects

To import schema projects choose one of the following options:

- In the Projects view, choose **Import > Schema Projects** from the context menu.
- In the Workbench menu bar select **File > Import...** and choose **Schema Projects**
The following wizard appears:

Select the directory from which import the schema project files and then check each schema project file you want to import.

### 3. Exporting projects

To export schema projects choose one of the following options:

- In the Projects view, choose Export > Schema Projects from the context menu.
- In the Workbench menu bar select File > Export... and choose Schema Projects

The following wizard appears:
Check each schema project you want to export and then select the directory where to export these schema project files.

4. **Creating a new schema**

To create a new schema, in the Schema view toolbar, click on the **New Schema** button (a project must be opened), or use the **Strg-E** shortcut.

The following wizard appears:

![Create a Schema wizard](image)

Give a name to the schema.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the schema. In the Schema view the empty project is listed with this name. The name must be unique.</td>
<td>empty</td>
</tr>
</tbody>
</table>

5. **Importing schemas**

5.1. **Importing schemas from XML files**

To import schemas from XML files choose one of the following options:

- In the Schema view, choose **Import > Schemas from XML file(s)** from the context menu.

- In the Workbench menu bar select **File > Import...** and choose **Schemas from XML file(s)**

The following wizard appears:
Select the directory from which import the schema files and then check each schema file you want to import.

5.2. Importing schemas from OpenLDAP files

To import schemas from OpenLDAP files choose one of the following options:

- In the Schema view, choose Import > Schemas from OpenLDAP file(s) from the context menu.
- In the Workbench menu bar select File > Import... and choose Schemas from OpenLDAP file(s)

The following wizard appears:

Select the directory from which import the schema files and then check each schema file you want to import.
5.3. Importing core schemas files

To import core schemas files choose one of the following options:

- In the Schema view, choose **Import > Core schemas file(s)** from the context menu.

- In the Workbench menu bar select **File > Import...** and choose **Core schemas file(s)**

The following wizard appears:

```
Check each schema file you want to import and click on the Finish button.
```

5.4. Merge schemas

You could merge schemas, object classes and attribute types from one schema project to another using the Merge Schemas wizard. To start the wizard choose **Import > Merge Schemas from other Projects** from the context menu of the Schema view.

The following wizard appears:
Tasks

Check each schema, object class and/or attribute type from to merge to the current schema project and click on the Next button.

The second wizard page appears:

Select merge options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace unknown syntax</td>
<td>If checked, unknown syntaxes are checked replaced by Directory String syntax, and appropriate matching rules (caseIgnoreMatch, caseIgnoreSubstringsMatch) are set.</td>
<td>checked</td>
</tr>
<tr>
<td>Merge dependencies</td>
<td>If checked, dependent schema elements (super checked classes, super attribute types, may and must attributes) are also merged.</td>
<td>checked</td>
</tr>
<tr>
<td>Merge inherited attributes</td>
<td>If checked, must and may attributes that are not checked defined in the class hierarchy in the target schema are added to the merged object class.</td>
<td>checked</td>
</tr>
</tbody>
</table>
6. Exporting schemas

6.1. Exporting schemas as XML files

To export schemas as XML files, choose one of the following options:

- In the Schema view, choose **Export > Schemas as XML file(s)** from the context menu.
- In the Workbench menu bar select **File > Export...** and choose **Schemas as XML file(s)**

The following wizard appears:

Check each schema you want to export and then select the directory where to export each schema as a separate file or a single destination file.

6.2. Exporting schemas as OpenLDAP files

To export schemas as OpenLDAP files, choose one of the following options:

- In the Schema view, choose **Export > Schemas as OpenLDAP file(s)** from the context menu.
- In the Workbench menu bar select **File > Export...** and choose **Schemas as OpenLDAP file(s)**

The following wizard appears:
Check each schema you want to export and then select the directory where to export each schema as a separate file.

6.3. Exporting schemas for Apache DS

To export schemas for Apache DS, choose one of the following options:

- In the Schema view, choose **Export > Schemas for Apache DS** from the context menu.
- In the Workbench menu bar select **File > Export...** and choose **Schemas for Apache DS**

The following wizard appears:
Check each schema you want to export and then select the directory where to export each schema as a separate file or a single destination file.

7. Creating a new attribute type

To create a new attribute type, choose one of the following options:

- In the Schema view, choose New > New Attribute Type from the context menu.
- In the Schema view, click the New Attribute Type button in the toolbar.
- In the Workbench menu bar select File > New... and choose New Attribute Type.
- You can also use the Strg-T shortcut.

The creation of a new attribute type is a three-step process:

1. Select the schema in which insert the new attribute type and specify its naming and description information (OID, aliases and description)

2. Specify the attribute type content such as superior and usage, as well as syntax and properties

3. Specify the equality, ordering and/or substring matching rules

Page 1

The first page allows you to select the schema in which insert the new attribute type and specify its naming and description information (OID, aliases and description).
### Option | Description | Default
--- | --- | ---
Schema | The schema in which insert the new attribute type. | empty
OID | The OID of the new attribute type. The OID must be unique. | empty
Aliases | The aliases (or names) of the new attribute type. Each alias (or name) must be unique. | empty
Description | The description of the new attribute type. | empty

**Page 2**

The second page allows you to specify the attribute type content such as superior and usage, as well as syntax and properties.
Tasks

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>The superior attribute type of the new attribute type.</td>
<td>empty</td>
</tr>
<tr>
<td>Usage</td>
<td>The usage of the new attribute type.</td>
<td>User Applications</td>
</tr>
<tr>
<td>Syntax</td>
<td>The syntax of the new attribute type.</td>
<td>(None)</td>
</tr>
<tr>
<td>Syntax Length</td>
<td>The syntax length of the new attribute type.</td>
<td>0</td>
</tr>
<tr>
<td>Obsolete</td>
<td>Indicates the new attribute type is obsolete.</td>
<td>Not checked</td>
</tr>
<tr>
<td>Single Value</td>
<td>Indicates the new attribute type is single value.</td>
<td>Not checked</td>
</tr>
<tr>
<td>Collective</td>
<td>Indicates the new attribute type is collective.</td>
<td>Not checked</td>
</tr>
<tr>
<td>No User Modification</td>
<td>Indicates the new attribute type is no user modification.</td>
<td>Not checked</td>
</tr>
</tbody>
</table>

Page 3

The third page allows you to specify the equality, ordering and/or substring matching rules.
8. Creating a new object class

To create a new attribute type, choose one of the following options:

- In the Schema view, choose **New > New Object Class** from the context menu.
- In the Schema view, click the **New Object Class** button in the toolbar.
- In the Workbench menu bar select **File > New...** and choose **New Object Class**
- You can also use the **Strg-B** shortcut.

The creation of a new object class is a four-step process:

1. Select the schema in which insert the new object class and specify its naming and description information (OID, aliases and description)
2. Specify the object class content such as superiors, class type and properties
3. Specify the mandatory attribute types of the new object class
4. Specify the optional attribute types of the new object class

**Page 1**

The first page allows you to select the schema in which insert the new object class and specify its naming and description information (OID, aliases and description).

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schema</td>
<td>The schema in which insert the new object class.</td>
<td>empty</td>
</tr>
<tr>
<td>OID</td>
<td>The OID of the new object class. The OID must be unique.</td>
<td>empty</td>
</tr>
<tr>
<td>Aliases</td>
<td>The aliases (or names) of the new object class. Each alias (or name) must be unique.</td>
<td>empty</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the new object class.</td>
<td>empty</td>
</tr>
</tbody>
</table>

**Page 2**

The second page allows you to specify the object class content such as superiors, class type and properties.
Page 3

The third page allows you to specify the mandatory attribute types of the new object class.
Tasks

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory Types</td>
<td>Attribute Types</td>
<td>The mandatory attribute types of the new object empty class.</td>
</tr>
</tbody>
</table>

Page 4

The forth page allows you to specify the optional attribute types of the new object class.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional Attribute Types</td>
<td>The optional attribute types of the new object class.</td>
<td>empty</td>
</tr>
</tbody>
</table>
Chapter III. Reference

1. Preferences

1.1. Hierarchy View preferences

In the Hierarchy View preferences page you can configure general settings for the Hierarchy view.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Choose one of First Name, All Aliases or OID to be used as label for attribute types or object classes. If the checkbox is checked long labels with more than the specified number of characters are abbreviated.</td>
<td>All Aliases with limit of 50 characters</td>
</tr>
<tr>
<td>Secondary label</td>
<td>Choose one of First Name, All Aliases or OID with no limit of OID to be used as secondary label for attribute characters types or object classes. If the checkbox is checked long labels with more than the specified number of characters are abbreviated.</td>
<td></td>
</tr>
</tbody>
</table>

1.2. Schema View preferences

In the Schema View preferences page you can configure general settings for the Schema view.
Option | Description | Default
--- | --- | ---
Label | Choose one of *First Name*, *All Aliases* or All Aliases with limit of *OID* to be used as label for attribute types or object classes. If the checkbox is checked long labels with more than the specified number of characters are abbreviated. | 50 characters
Secondary label | Choose one of *First Name*, *All Aliases* or *OID* with no limit of *OID* to be used as secondary label for attribute characters types or object classes. If the checkbox is checked long labels with more than the specified number of characters are abbreviated. | 
Schema label | If the checkbox is checked the name of the schema of the element will be added to the label. | Checked

### 1.3. Search View preferences

In the Search View preferences page you can configure general settings for the Search view.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Choose one of <strong>First Name</strong>, <strong>All Aliases</strong> or <strong>All Aliases</strong> with limit of 50 characters to be used as label for attribute types or object classes. If the checkbox is checked long labels with more than the specified number of characters are abbreviated.</td>
<td></td>
</tr>
<tr>
<td>Secondary label</td>
<td>Choose one of <strong>First Name</strong>, <strong>All Aliases</strong> or <strong>OID</strong> with no limit of <strong>OID</strong> to be used as secondary label for attribute characters types or object classes. If the checkbox is checked long labels with more than the specified number of characters are abbreviated.</td>
<td></td>
</tr>
<tr>
<td>Schema label</td>
<td>If the checkbox is checked the name of the schema will be added to the label.</td>
<td><strong>Checked</strong></td>
</tr>
</tbody>
</table>