

# **Apache Directory Studio Schema Editor**

## **User's Guide**

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# 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> [<https://directory.apache.org/studio/downloads.html>] .

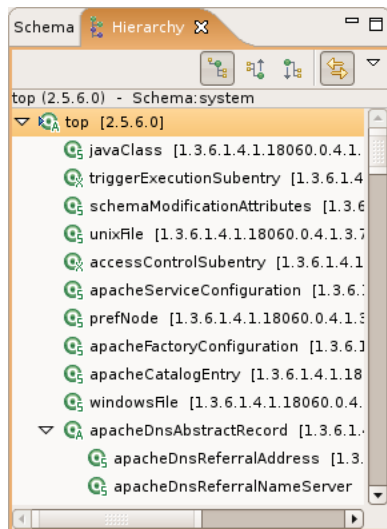
The download page also includes the installation instructions.

## 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:







#### 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:

-  - *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**

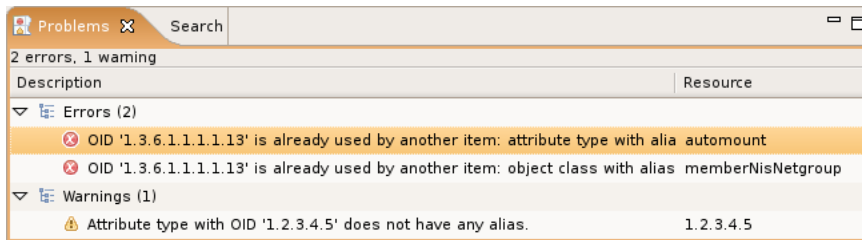
The following icons can appear in the Hierarchy view:

Icon	Description
	Attribute type (operational)
	Attribute type (user)
	Object class (abstract)
	Object class (auxiliary)
	Object class (structural)
	Attribute type (current selection)
	Object class (current selection)

## 2.2. Problems view


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

Here is what the Problems view looks like:



**Icons**

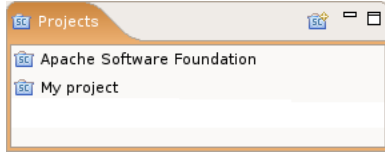
The following icons can appear in the Problems view:

Icon	Description
	Error
	Warning

## 2.3. Projects view


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

Here is what the Projects view looks like:







### 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:

Icon	Description
	Closed offline project
	Opened offline project
	Closed online project
	Opened online project

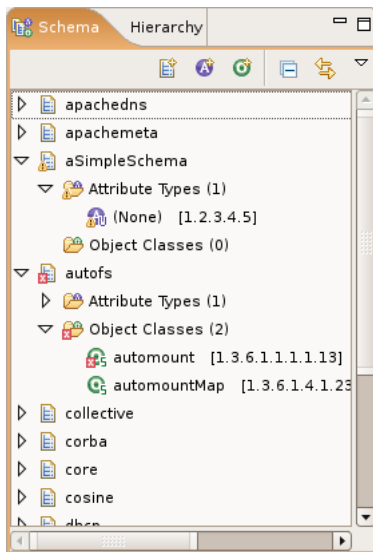
## 2.4. Schema view

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

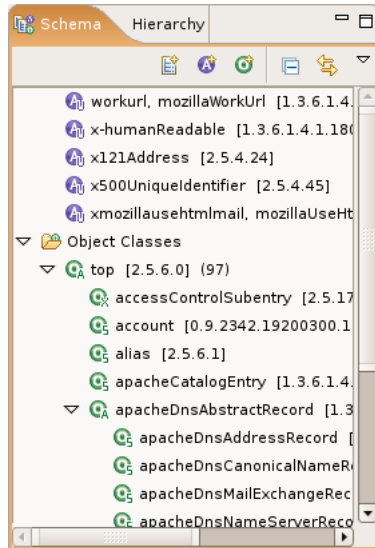
The Schema view has two types of presentation:

- 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:





### 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:

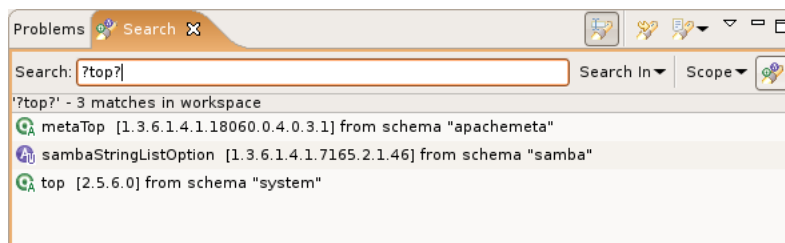
Icon	Description
	Attribute type (operational)
	Attribute type (user)

Icon	Description
	Object class (abstract)
	Object class (auxiliary)
	Object class (structural)
	Indicates an error on the resource
	Indicates a warning on the resource

## 2.5. Search view




The Search view displays the results of a search.

Here is what the Search view looks like:




### Toolbar

The toolbar of the Search view contains the following actions:

-  - *Show Search Field* : Shows the search field in the Search view.
-  - *Run the Current Search Again* : Runs the current search again.
-  - *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:

-  - *Sorting...* : Opens the Sorting dialog for this view.
- *Preferences* : Opens the Preferences dialog for this view.

### Icons

The following icons can appear in the Search view:

Icon	Description
	Attribute type (operational)
	Attribute type (user)
	Object class (abstract)
	Object class (auxiliary)
	Object class (structural)



## 3. Editors

### 3.1. Attribute type editor

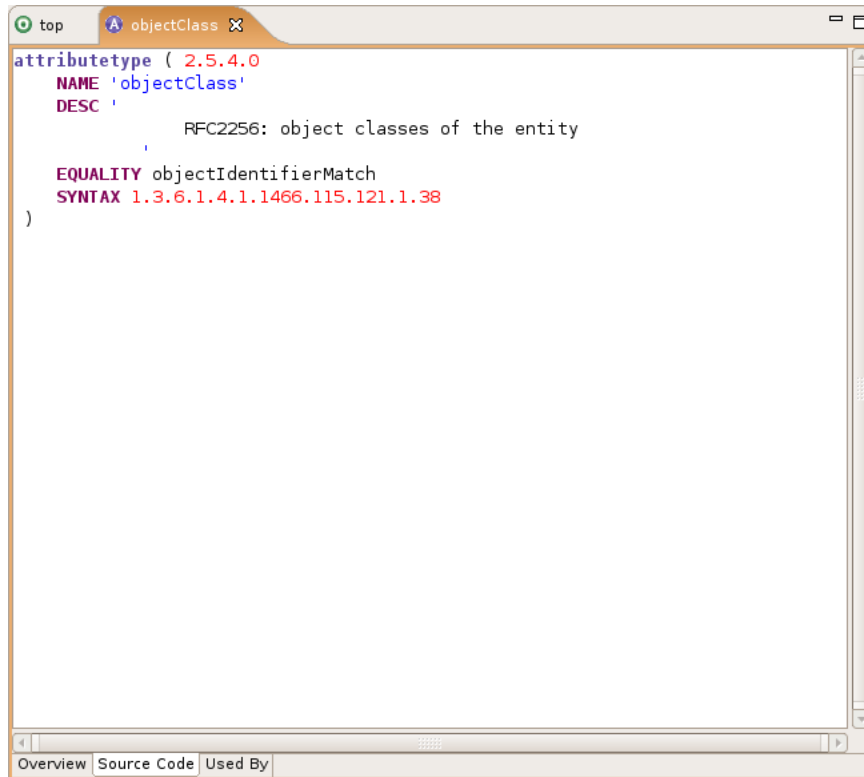
The attribute type editor is the one-stop shop where you can define all aspects of your attribute type.

The screenshot shows a web-based editor window titled 'objectClass'. It is divided into two main sections: 'General information' and 'Matching Rules'.  
**General information:** This section allows users to specify general information for the attribute type. It includes fields for Aliases (currently 'objectClass'), OID (2.5.4.0), Description (RFC2256: object classes of the entity), Schema (system), Superior type (None), Usage (User Applications), and Syntax (OID - (1.3.6.1.4.1.1466.115.121.1.38)). There are also checkboxes for 'Obsolete', 'Collective', 'Single-Value', and 'No-User-Modification'.  
**Matching Rules:** This section allows users to specify matching rules for Equality, Ordering, and Substring. The Equality rule is currently set to 'objectIdentifierMatch - (2.5.13.0)'.  
At the bottom of the window, there are tabs for 'Overview', 'Source Code', and 'Used By', with 'Overview' being the active tab.

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

User can edit:

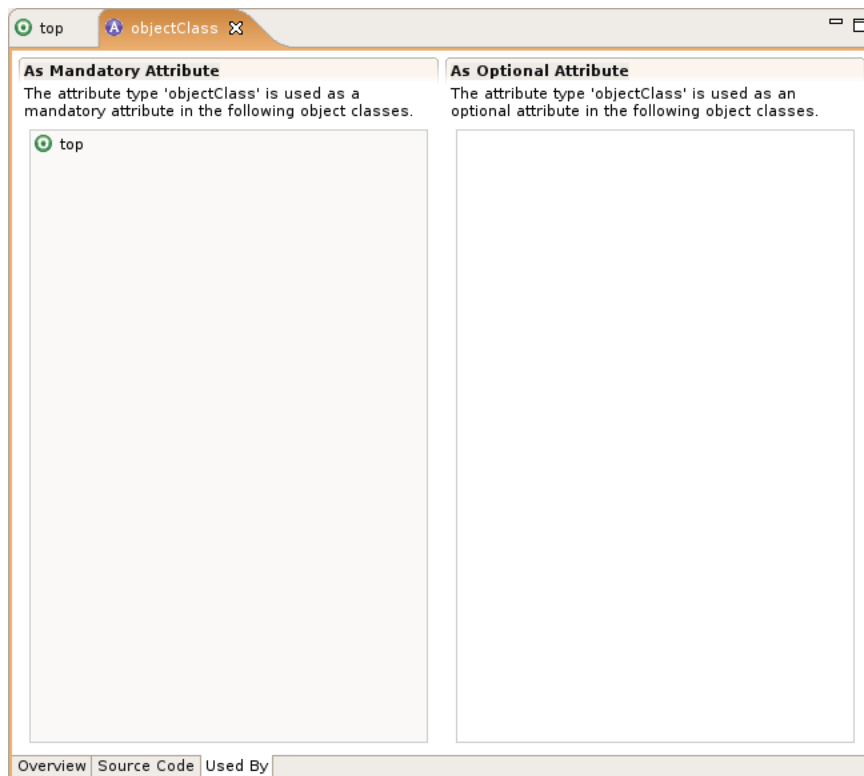
- the name
- the OID
- the description
- the superior type
- the usage
- the syntax and syntax length
- if the attribute type is obsolete
- if the attribute type is single-value
- if the attribute type is collective
- if the attribute type is no-user-modification
- all the matching rules (equality, ordering, substring)



```
attributetype ( 2.5.4.0
  NAME 'objectClass'
  DESC '
    RFC2256: object classes of the entity
  '
  EQUALITY objectIdentifierMatch
  SYNTAX 1.3.6.1.4.1.1466.115.121.1.38
)
```

Overview Source Code Used By

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.



**As Mandatory Attribute**  
The attribute type 'objectClass' is used as a mandatory attribute in the following object classes.

- top

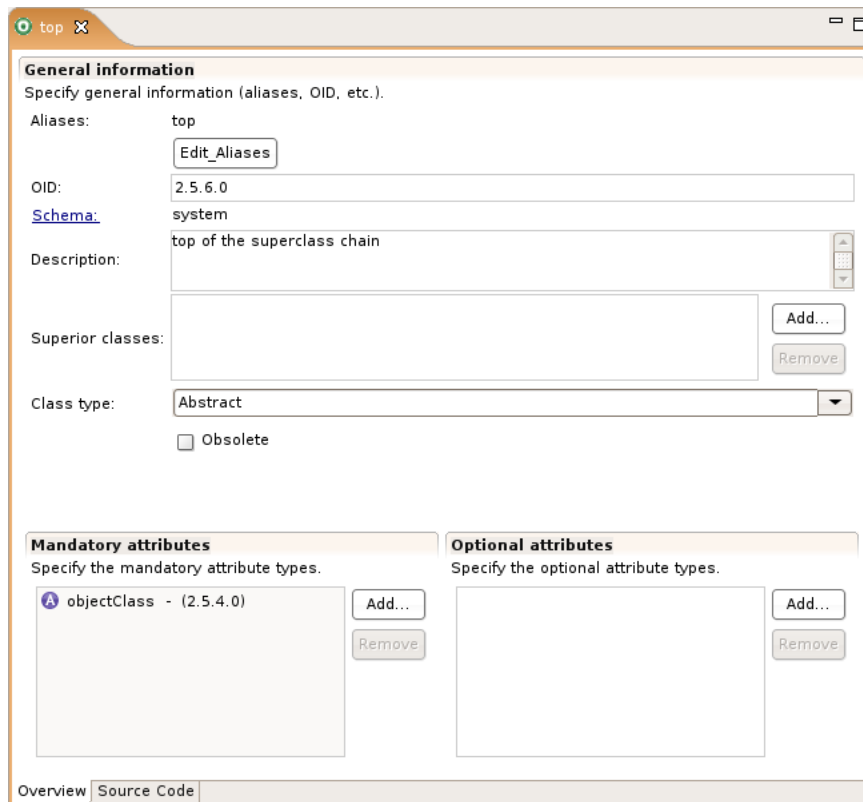
**As Optional Attribute**  
The attribute type 'objectClass' is used as an optional attribute in the following object classes.

Overview Source Code Used By

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 screenshot shows a web-based interface for editing an object class. The window title is "top". The main section is titled "General information" and contains the following fields:

- Aliases:** "top" with an "Edit Aliases" button.
- OID:** "2.5.6.0"
- Schema:** "system" (with a link to "Schema")
- Description:** "top of the superclass chain" (with a text area and scrollbars)
- Superior classes:** An empty list with "Add..." and "Remove" buttons.
- Class type:** "Abstract" (with a dropdown menu and an "Obsolete" checkbox).

Below the general information are two sections for attributes:

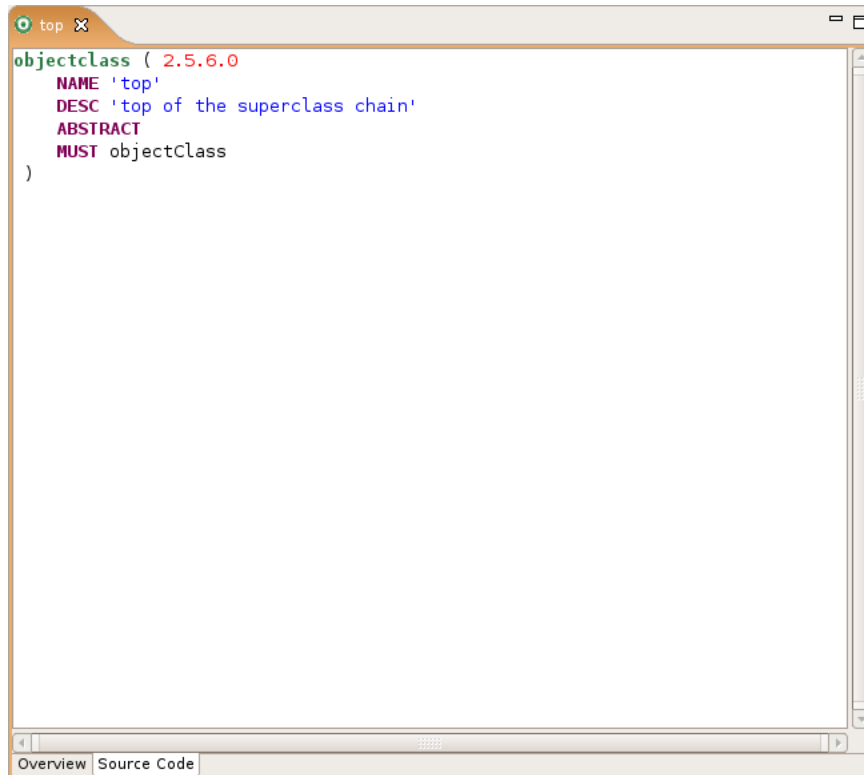
- Mandatory attributes:** "Specify the mandatory attribute types." It contains one entry: "objectClass - (2.5.4.0)" with "Add..." and "Remove" buttons.
- Optional attributes:** "Specify the optional attribute types." It is currently empty with "Add..." and "Remove" buttons.

At the bottom, there are tabs for "Overview" and "Source Code".

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)



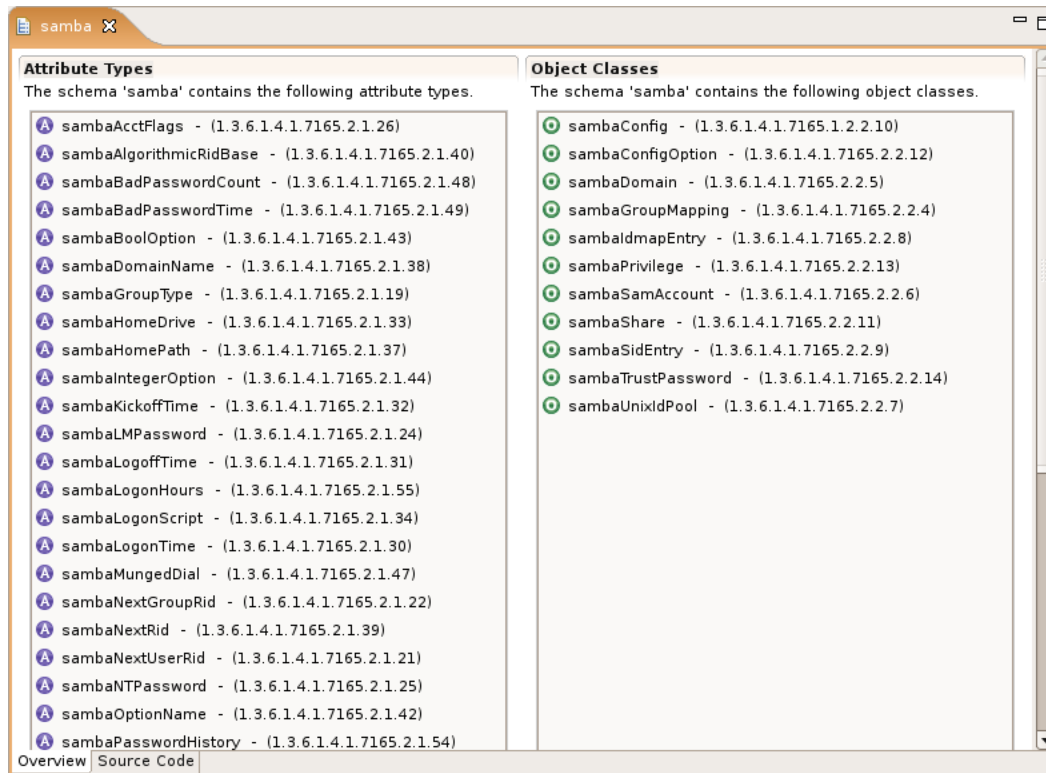
```
objectclass ( 2.5.6.0
  NAME 'top'
  DESC 'top of the superclass chain'
  ABSTRACT
  MUST objectClass
)
```

The screenshot shows a browser window with a single tab titled 'top'. The main content area displays the source code for an object class. The code is color-coded: 'objectclass' is green, '( 2.5.6.0' is red, 'NAME' is blue, 'DESC' is blue, 'ABSTRACT' is blue, 'MUST' is blue, and 'objectClass' is blue. The code is enclosed in parentheses. At the bottom of the browser window, there are two tabs: 'Overview' and 'Source Code', with 'Source Code' being the active tab.

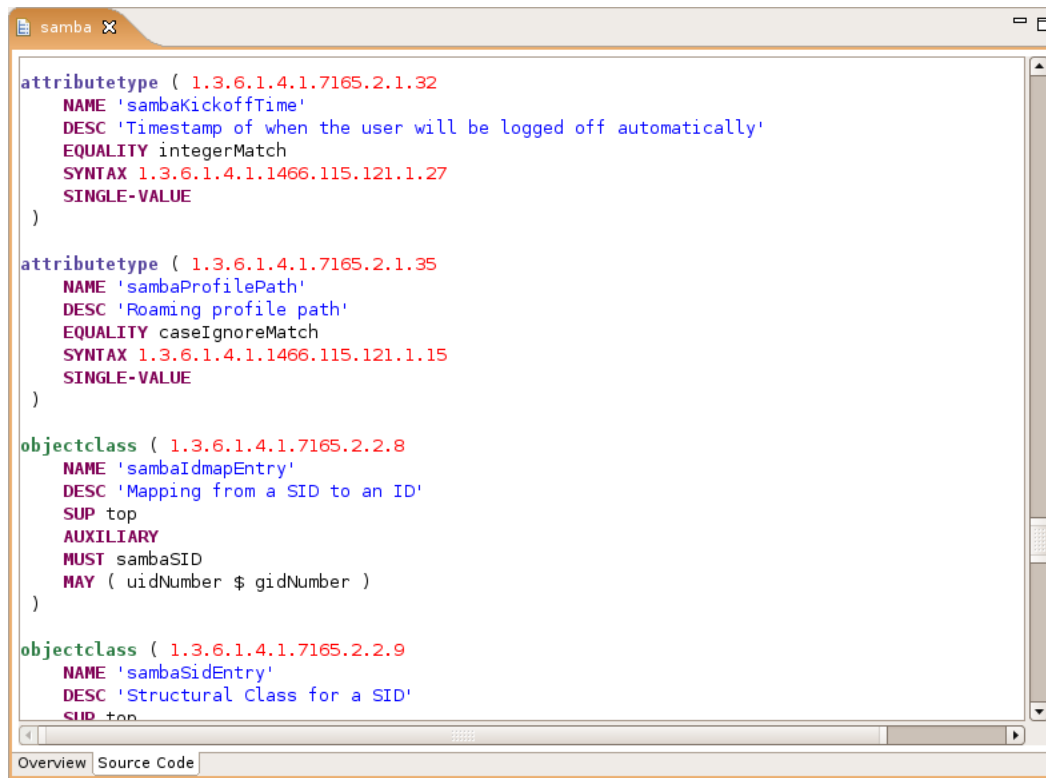
The **Source code** page is where the user can see the result of his actions in the Overview page and what source code will be generated in the schema file.

### 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.

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# Chapter II. Tasks

## 1. Creating a new project

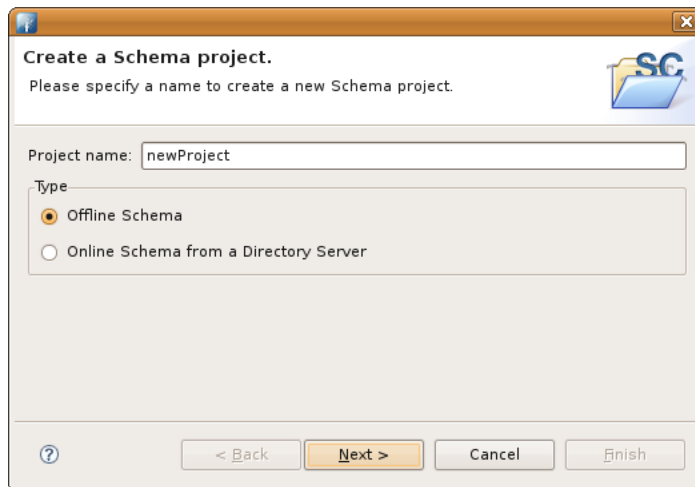
To create a new project, in the Projects view toolbar, click on the  **New Schema Project** button, or use the **Strg-R** shortcut.

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

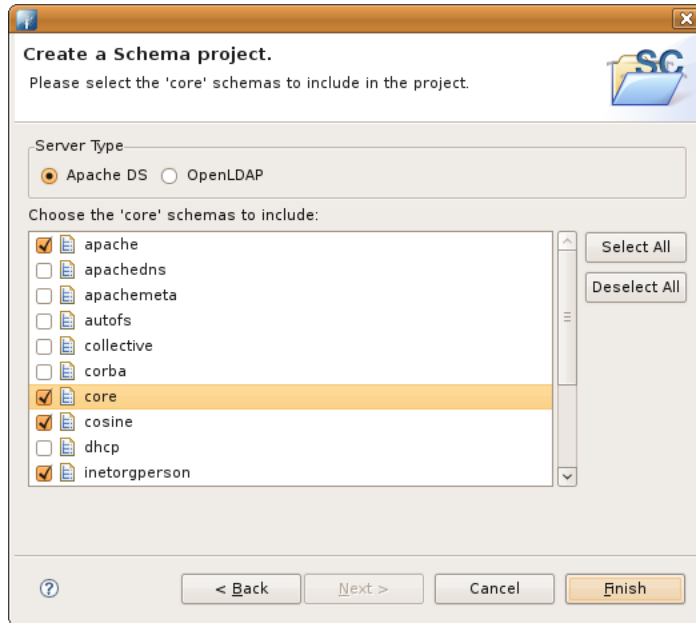
The first page allows you to enter a project name and select the type of project.



Option	Description	Default
Name	The name of the project. In the Projects view the project is listed with this name. The name must be unique.	empty
Type	The type of the project. Choose between Offline Schema and Online Schema from a Directory Server.	Offline Schema

### Page 2 (offline)

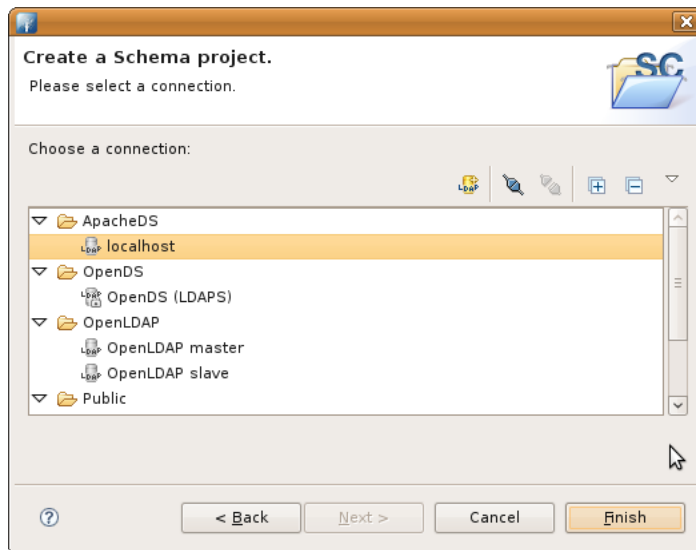
The second page allows you to select the 'core' schema files to import.



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

## Page 2 (online)

The second page allows you to select the connection to the directory server from which the schema should be loaded.



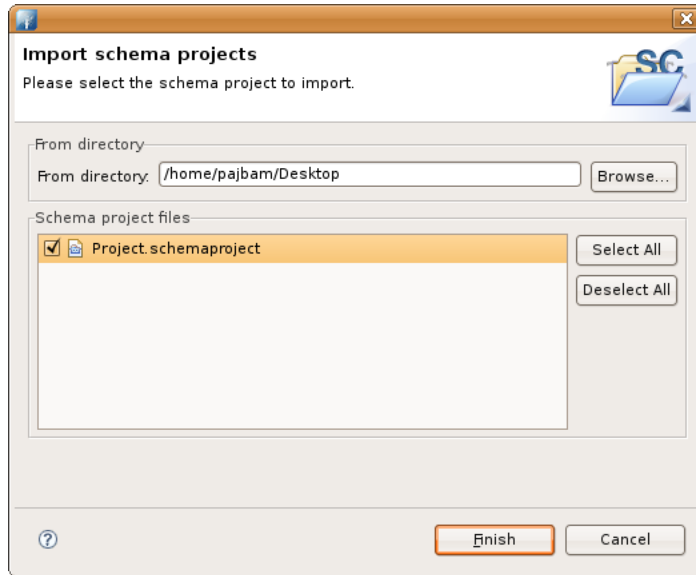
## 2. Importing projects

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:



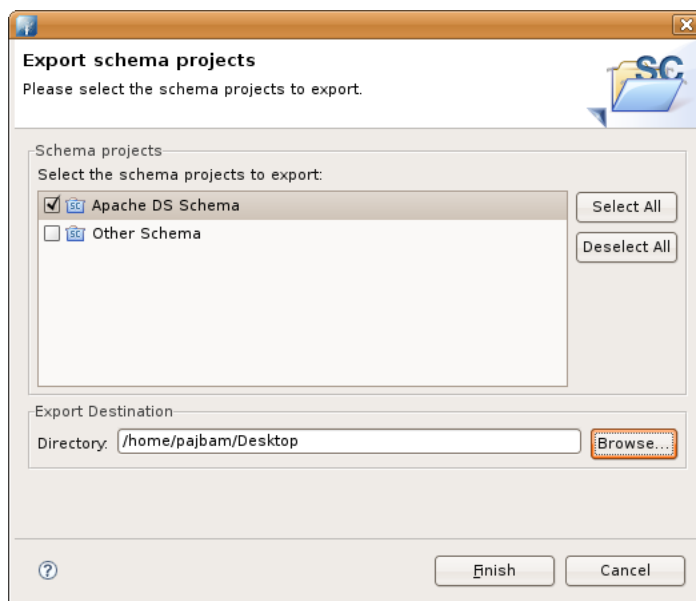
Select the directory from which import the schema project files and then check each schema project file you want to import.

### 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:

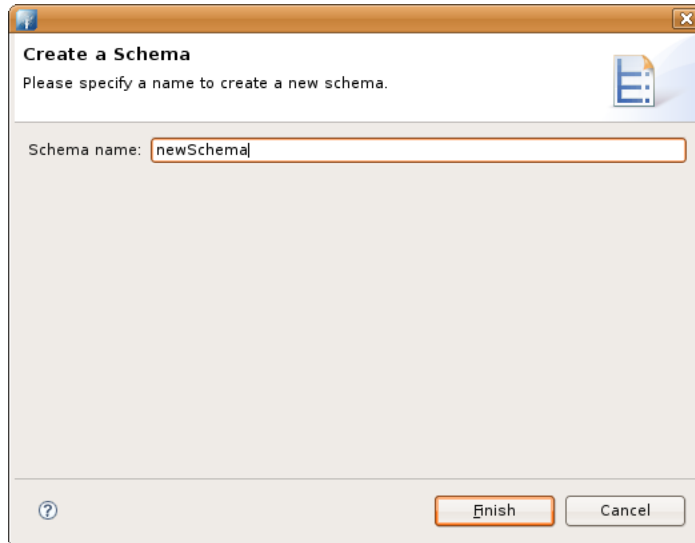


Check each schema project you want to export and then select the directory where to export these schema project files.

## 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:





Give a name to the schema.

Option	Description	Default
Name	The name of the schema. In the Schema view the project is listed with this name. The name must be unique.	empty

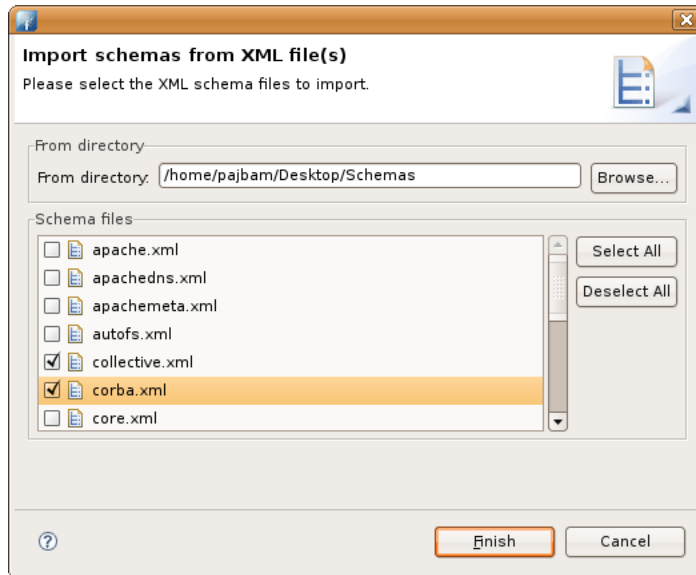
## 5. Importing schemas

### 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:



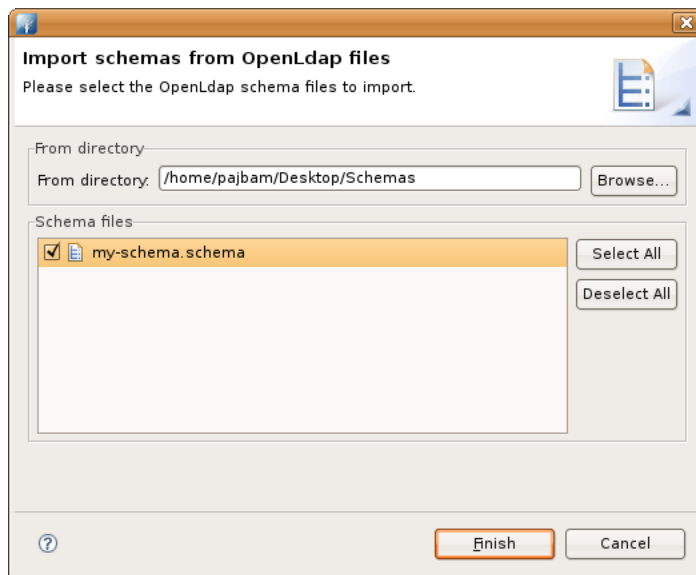
Select the directory from which import the schema files and then check each schema file you want to import.

## 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:



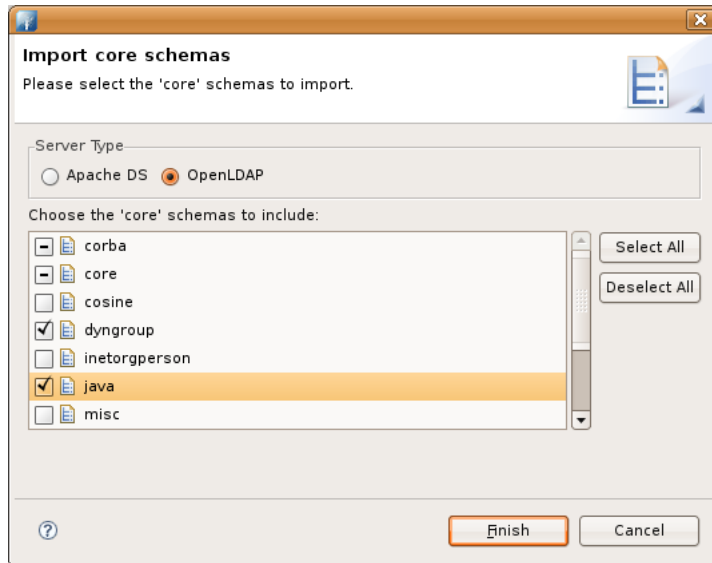
Select the directory from which import the schema files and then check each schema file you want to import.

## 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:

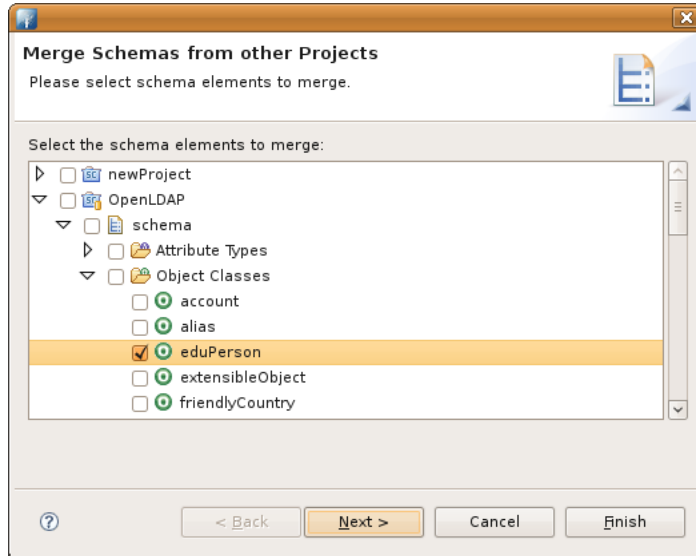


Check each schema file you want to import and click on the **Finish** button.

## 5.4. Merge schemas

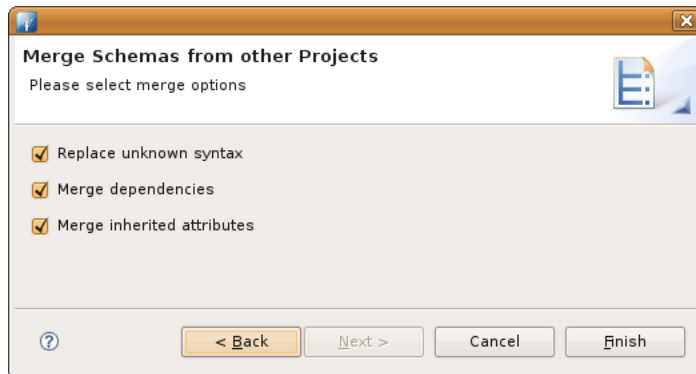
You could merge schemas, object classes and attribute types from one schema project to another using the Merge Schemas wizard. To start the wizard choose **Import** >  **Merge Schemas from other Projects** from the context menu of the Schema view.

The following wizard appears:



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.

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

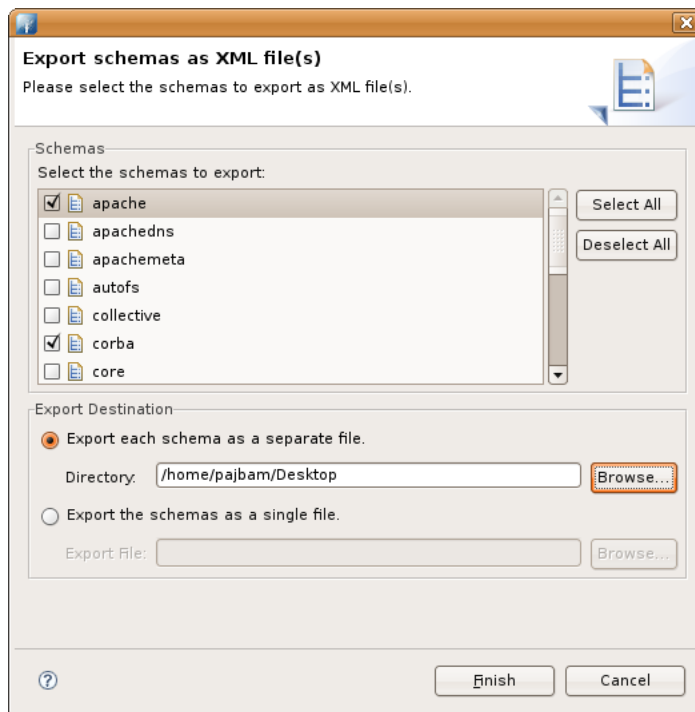
## 6. Exporting schemas

### 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:



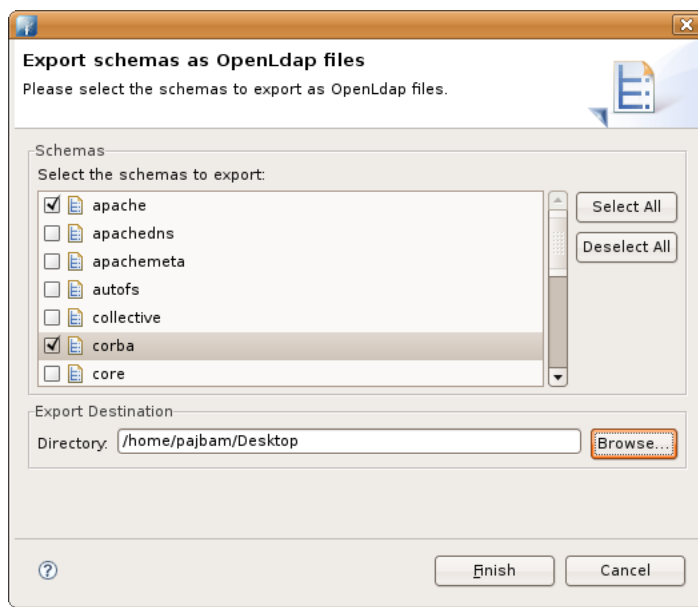
Check each schema you want to export and then select the directory where to export each schema as a separate file or a single destination file.

### 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:



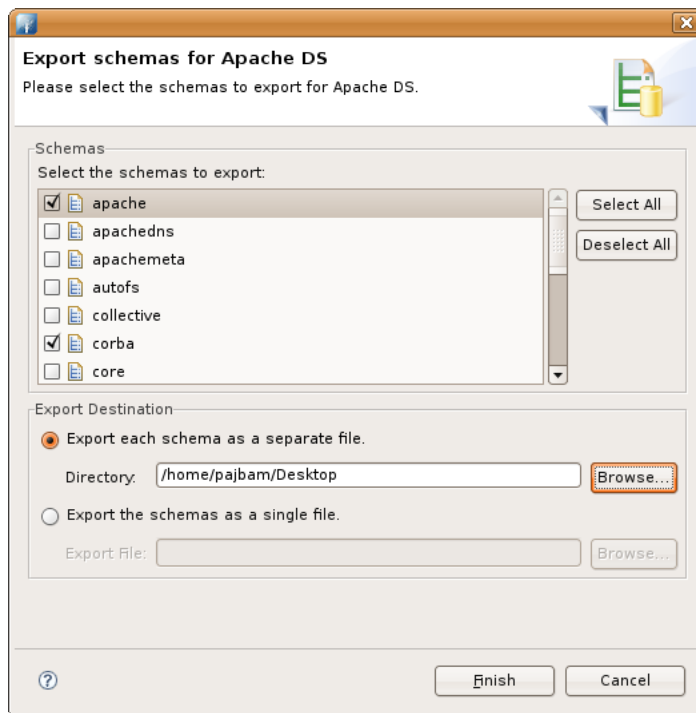
Check each schema you want to export and then select the directory where to export each schema as a separate file.

## 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

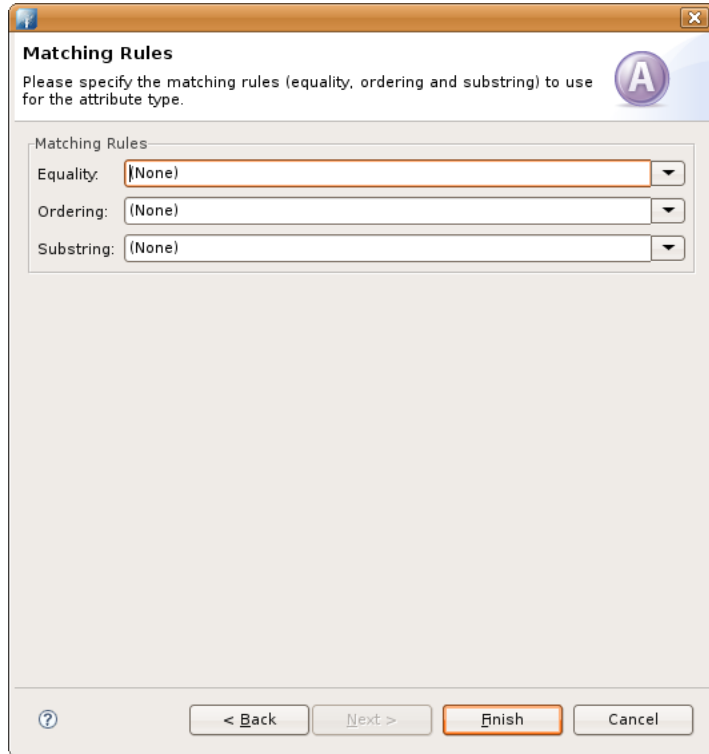
## Page 2

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

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

## Page 3




The third page allows you to specify the equality, ordering and/or substring matching rules.



Option	Description	Default
Equality	The equality matching rule of the new attribute type.	(None)
Ordering	The ordering matching rule of the new attribute type.	(None)
Substring	The substring matching rule of the new attribute type.	(None)

## 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

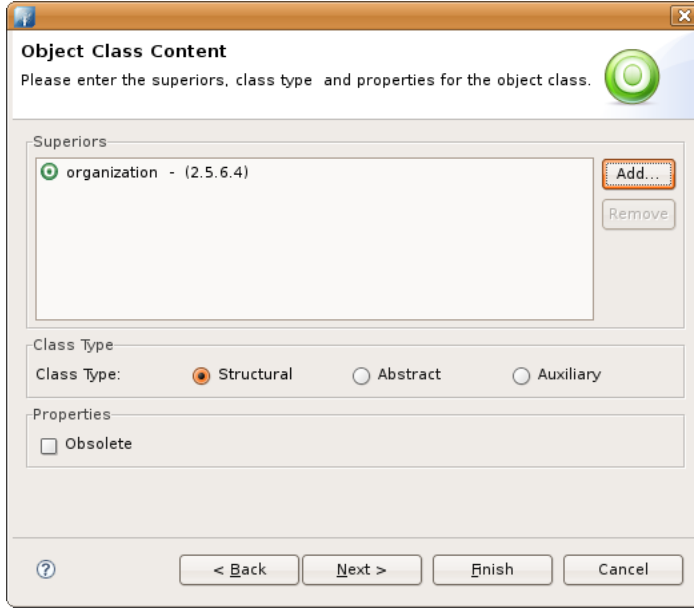
## Page 1

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).

Option	Description	Default
Schema	The schema in which insert the new object class.	empty
OID	The OID of the new object class. The OID must be unique.	empty
Aliases	The aliases (or names) of the new object class. Each alias (or name) must be unique.	empty
Description	The description of the new object class.	empty

## Page 2

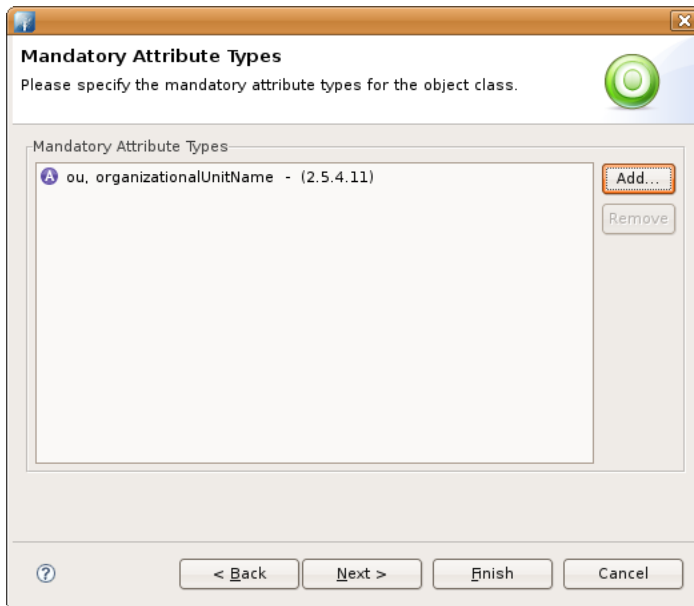
The second page allows you to specify the object class content such as superiors, class type and properties.



Option	Description	Default
Superiors	The superiors object classes of the new object class.	empty
Class Type	The class type of the new object class.	Structural
Obsolete	Indicates the new object class is obsolete.	Not checked

## Page 3

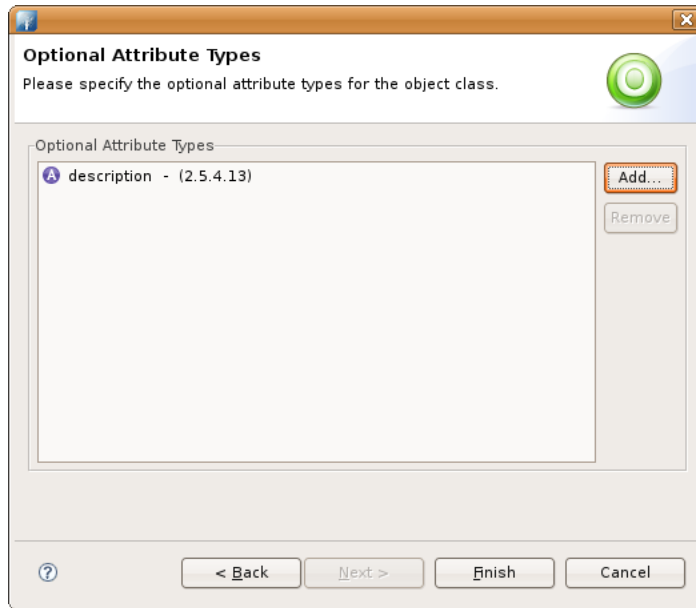
The third page allows you to specify the mandatory attribute types of the new object class.



Option	Description	Default
Mandatory Attribute Types	The mandatory attribute types of the new object class.	empty

## Page 4

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



Option	Description	Default
Optional Attribute Types	The optional attribute types of the new object class.	empty

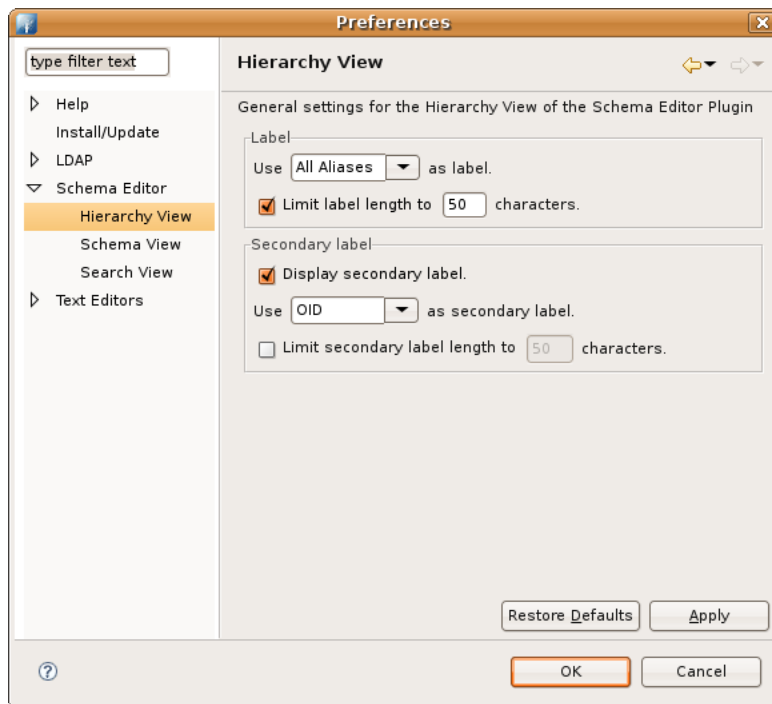
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# Chapter III. Reference

## 1. Preferences

### 1.1. Hierarchy View preferences

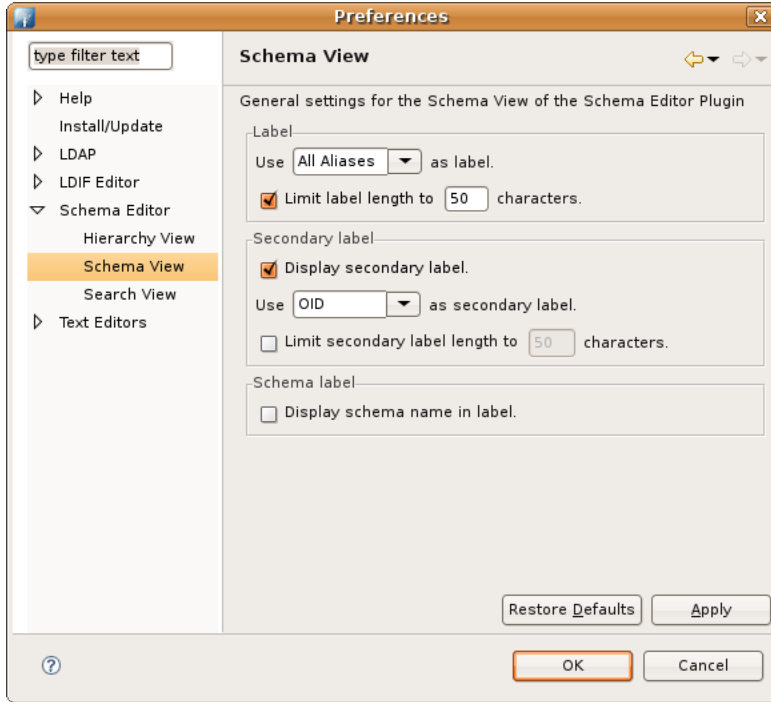
In the Hierarchy View preferences page you can configure general settings for the Hierarchy view .



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

### 1.2. Schema View preferences

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

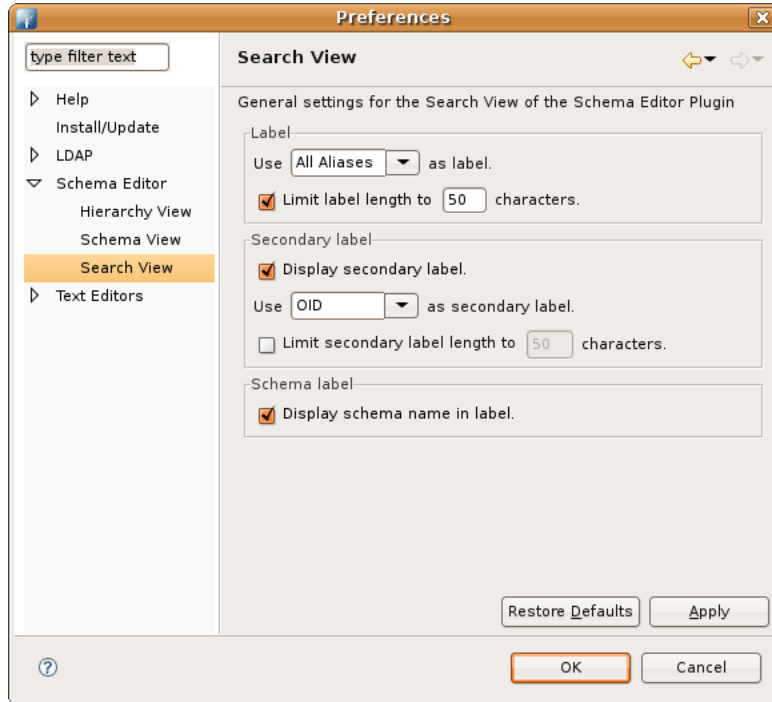


Option	Description	Default
Label	Choose one of <b>First Name</b> , <b>All Aliases</b> or <b>OID</b> to be used as label for attribute types or object classes. If the checkbox is checked long labels with more than the specified number of characters are abbreviated.	All Aliases with limit of 50 characters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





Option	Description	Default
Label	Choose one of <b>First Name</b> , <b>All Aliases</b> or <b>OID</b> 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.	All Aliases with limit of 50 characters
Secondary label	Choose one of <b>First Name</b> , <b>All Aliases</b> or <b>OID</b> to be used as secondary label for attribute types or object classes. If the checkbox is checked long labels with more than the specified number of characters are abbreviated.	OID with no limit of characters
Schema label	If the checkbox is checked the name of the schema of the element will be added to the label.	Checked