Adeptia Suite 6.2 Developer Guide

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Adeptia Support Information

For support queries, please contact us at *support@adeptia.com*.

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PREFACE

This document covers a detailed description of all activities and services of Adeptia Suite that are available to a developer. It acts as a guideline to use these services seamlessly and use them in a design environment using Adeptia Suite.

A developer also has access to the other features of the Adeptia Suite. For details, refer to the Business User Guide, Process Modeling and Simulation Guide and Administrator Guide.

Target Audience

Even though all these features are available to all users, they are primarily performed by a developer. Thus, this document is intended for developers. They can use these details to seamlessly perform all design features of Adeptia Suite.

Pre-requisites

It is important to read the Getting Started guide before reading this guide.

OTHER RESOURCE MATERIALS

The following other resource materials are available:

Title	Description
Installation Guide	This document provides guidelines for installing Adeptia Suite on Microsoft Windows and Linux/Solaris operating systems.
Getting Started Guide	This document is intended as a reference for those working with Adeptia Suite for the first time.
Administrator Guide	This document provides a detailed description of the Administrative features of Adeptia Suite. It guides you to seamlessly manage the functioning, design and integration of business processes using these administrative features.
Business User Guide	This document covers a detailed description of all features of Adeptia Suite that are available to a business user. It acts as a guideline to use these features seamlessly and perform them in a business environment using Adeptia

	Suite.
Modeler and Simulation Guide	This document provides an overview of Process Modeler and Simulation features of Adeptia Suite and covers the description and usage of these tools. It guides you to seamlessly use these tools to analyze, optimize and enhance a business process.

HOW IS THIS GUIDE ORGANIZED?

This guide is organized into the following sections:

Section	Description
Preface	Introduction to this document
Designing Web Forms	Creating and activating Web Forms
Designing Human Workflow Task	Designing HTML page, using Task Manager
Working With Process Flow	Understanding Process Designer and graphical elements
Creating Data Dictionary	Creating Positional Data Dictionary, creating EDI Data Dictionary
Creating Source Activity	Identifying specific source data to be read, its location and the transport protocol that is used to retrieve data and creating various types of source activities
Creating Schema Activity	Creating different schemas to parse the data files.
Creating Target Activity	Identifying specific data set to be created and the means to deliver it and creating various types of target activities.
Error! Reference source not found.	Creating Security Policy activity for Web Services, Consumer Web Services using UDDI , and Consumer Web Services using URI
Transforming Data	Using Data Mapper, Record to Record Service

Section	Description
Creating Extensions	Creating a Custom Plugin Activity, Creating a Native Call Activity
Creating Polling Service Activity	Performing the 'listen' action at a frequency specified while creating various types of Polling Services
Creating Database Connectors	Creating Database Driver, Creating Database Info, Creating JMS Provider
Creating Miscellaneous Activities	Creating Context Download, Context Upload, Stored Procedure, Mail Notification
Using Reports and Dashboards	Creating Dashboard Component, Designing Dashboard, Executing Dashboard, Creating Custom Report
Managing Activities	Searching an Activity, Viewing Properties of an Activity, Editing and deleting an Activity, Viewing Revision History, dependent Activities, and Changing Advanced Properties of an Activity
Using Version Control	Maintaining Versions of objects
Creating Events and Triggers	Scheduling and triggering a process flow by creating various types of Trigger Events
Using Data Interface	Create Source and Target activities, Creating Event, Creating Data Interface, Activating the Event
Recovery	Enabling Implicit Recovery, Using Checkpoints, Using Human Workflow activity

CONVENTIONS

The following tables list the various conventions used in Adeptia documentation. We follow these conventions to help you quickly and easily identify particular elements, processes, and names that occur frequently in documents.

Abbreviations Used

This guide uses the following abbreviations:

Convention	Description

Convention	Description
EBIM Suite	Enterprise Business Integration Management Suite
BPM Suite	Business Process Management Suite
ESB Suite	Enterprise Service Bus Suite
ETL Suite	Extract, Transform and Load Suite
WebDAV	Web-based Distributed Authoring and Versioning

Typographical conventions

This guide uses the following typographical conventions:

Convention	Description
Bold text	Indicates one of the following: ▪ Screen element ▪ New terminology ▪ A file or folder name ▪ A control in an application's user interface ▪ Important information
Italic text	Indicates a reference or the title of a publication.
`Monospaced text`	Indicates code examples or system messages.
`Monospaced bold text`	Indicates system commands that you enter.
Hyperlink	Indicates an Internet link to target material.

Graphical conventions

This guide uses the following graphical conventions:

Convention	Description

	Indicates additional information that may be of interest to the reader.
	Indicates cautions that, if ignored, can result in damage to software or hardware.

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These sections present contact information for a variety of situations.

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In case of any sales queries, please contact us at *sales@adeptia.com*.

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WORKING WITH PROJECTS

A new feature '**Project**' has been introduced in Adeptia Suite version 6.0. This feature enables you to encapsulate objects, such as *Activities and Process Flows,* within an entity called **'Project'**. A process may have different types of activities, such as a File Source activity, a FTP Event activity, or a Database schema and may have multiple process flows. You can save all these objects within a **'Project'**. A Project acts as a container for these objects.

This feature enables you to manage objects of your process within a Project. In addition, you can perform the basic operations, such as View, Edit, and Delete on these objects. In addition, before deleting an object, you can also check the dependencies. However, you cannot create an object within a Project. You can only add an object to a Project by saving the object (at the time of creating or editing the object) within the required project.

In addition, this feature allows you to create multiple Projects to manage and organize different processes. You can manage all the Projects from a single screen and perform the basic operations, such as Create, View, Edit and Delete on these projects.

By default a project called **'Default'** is already created in Adeptia Suite. This is the default project of Adeptia Suite. If you do not want to add your object in any of the projects or if you do not select any project while creating or editing the object then by default, the object will be added in the default project 'Default'.

To further strengthen the **'Project**' feature, we have added a new feature to the Adeptia Suite 6.1, Group Level Project Scope feature. This new addition allows you to manage projects based on the group of a user. This feature will only display you the activities that belong to your group. After installing the latest patch, you will not be able to view any of the existing projects that you have created by using any of the previous versions of Adeptia Suite. To overcome this issue, the Administrator needs to edit and assign all the existing projects to appropriate groups. For more information about this new feature please refer to Group Level Project Scope section.

This section covers:

- Creating a Project
- Managing Backward Compatibility
- Group Level Project Scope
- Assigning a Default Project to a user
- Adding an Activity to a Project
- Managing Activities within a Project
- Moving Objects Of A Project
- Moving Activities from one Project to another Project
- Deleting a Project

In the Adeptia Suite, this feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

CREATING A PROJECT

Consider an example. In your organization, you are responsible for automating the Warehouse Inventory process. To accomplish this, you may need to work with numerous objects and perform common operations such as Create, View, Edit, and Delete on various activities and process flows. Hence, to manage any object, you need to go to the *Manage* page of that particular object and perform the required operation. For example, to edit an existing File Source activity, you need to go to the *File Source Manage* page. Similarly, to delete any Excel Schema, you need go to the *Excel Schema Manage* page. Note that a *File Source Manage* page may have activities that are not related with your process. Therefore, in this case, you also view the objects that are not related to your process.

With the new feature '**Project**', you can perform the above task in the following way.

For this, you first need to create a project in a group. After creating the project, you can set this project as your default project. Now all the objects that you create, by default will be added in this project. If you do not select this as project as your default project, you can still add an object to a project by selecting the project while creating or editing the activity

This section explains how to create a project. You just need to provide the project name, add a description and select a group for the project.

> ℹ️ Only users of sysadmin or the groupadmin type can create a project. sysadmin type user can create a project for any group, whereas groupadmin type user can create a project within a group only.

Steps to create a Project

1. On the Adeptia Suite homepage, go to **Develop → Projects**.

   The *Project* Manage page is displayed (see Figure 1).

Figure 1: Project Manage Page

2. Click the **Create New** link to create a new project. The *Projects* page is displayed.

3. Enter the name and description of the new project in the **Name** and **Description** text boxes respectively.

4. From the **Group** drop-down list, select a group to which this new project would belong.

5.   Click **Advance Properties** to set the values of the advance properties related with the new project.

6.   Select the owner from the drop-down list **Owner** to assign the project to the required user (see Figure 2).

New Project   ✕

◢   Standard Properties

                              Name* | Warehouse_Inventory |

                       Description* | A new project to manage the objects – activities and process flows of Inventory Management. |

                              Group* | administrators ▾ |

◢   Advanced Properties

                              Owner* | admin ▾ |

      * Mandatory fields.

                                                                                      | Save |

Figure 2: Project Manage Page

> ℹ   The **Owner** drop-down list displays the name of the user who has created this respective activity and the member users of this group.

7. Click the **Save** button to save the project. This action will display you the new project on the *Project* Manage page (see Figure 3).

Figure 3: Project Manage Page

The *Project Manage* page displays all the projects within Adeptia Suite including the default project **'Default'**. If you do not want to add your object in any of the listed projects or you do select any project while creating or editing the object then by default, the Adeptia Suite will add the object in the default project **'Default'**.

> To view the list of activities within a project, click the respective project name. This opens the *Project Activity Listing* page.
>
> A new project does not have any activity. Once you add the activities within this project, you can use this page to view the list of all activities under this project.
>
> If you want to learn more about the scope of the project, please refer to the Group Level Project Scope section.

MANAGING BACKWARD COMPATIBILITY

This section is relevant to you if:

- You have used the *Project* feature of Adeptia Suite in Adeptia Suite 6.0.
- You have upgraded to Adeptia Suite V6.1 or above .

The group-level scope feature of Adeptia Suite allows you to manage your projects based on the group of a user. This means that after you upgrade to Adeptia Suite V6.1 or above, your projects will not be visible to you if:

- You log-in with a developer user's user-id and password.
- You log-in with a business user's user-id and password.

You would first need to follow certain steps before you again start using the *Project* feature in Adeptia Suite V6.1 or above. Please follow the below steps in order to configure your Adeptia Suite V6.1 or above and manage backwards compatibility:

1. Login with sysadmin user type to see all your existing projects.

2. As the scope of the project is now at the group level, so you would first need to assign the group the projects by editing them all.

> For more information on how to assign a group to a project, please refer to Steps to Create a Project section.
>
> If you want to learn more about the scope of the project, please refer to the Group Level

Project Scope section.

3. If there are activities of multiple groups within a project then, you need to move the objects of that project to a new group and then assign a project to that group.

> **i** For more information on how to move the objects of a project to a new group, please refer to the Moving Objects Of A Project section.

4. After you assign a group to a project, you need to assign a project to all the user.

> **i** For more information on how to assign a project to a user, please refer to the Assigning a Default Project to a User section.

5. Logout as sysadmin and login as a normal user.

GROUP LEVEL PROJECT SCOPE

This new feature of Adeptia Suite allows you to manage projects based on the group of a user. This feature will only display you the activities that belong to your group. However, all the projects and activities will be visible to the Adeptia Suite server administrator (hereby referred to as "Administrator"). An Administrator has many responsibilities such as:

- Creation of project for any group
- Edit or modification of a project of any group
- Deletion of any project from any group
- Listing of activities for any group
- Moving of activities between groups
- Assignment of activities to a project for any group
- Activity check-in for any group
- Bulk check-in of activities for any project within any groups

> **i** The Administrator would have to categorize all the existing projects in groups by editing the projects and assign them to groups.

Apart from these activities, an administrator can also choose a group administrator for a particular group who would manage that group. The responsibilities of a group administrator are as follows:

- Creation of project for its group
- Edit or modification of a project of its group
- Deletion of any project from its group
- Listing of activities in its group
- Moving of activities within the group
- Assignment of activities to a project within a group
- Activity check-in within a group

- Bulk check-in of activities for a project within its group

> **i** There would be multiple group admins for multiple groups. A single group admin cannot administer multiple groups.

The Group Admin further has to create users who would work in a particular group. However, the Administrator can also select these group members. A developer is responsible for the following tasks:

- Assignment of activities to a project within a group
- Listing of activities in its group
- Activity check-in within a group

> **i**
> - If you have assigned a project to a group and that project contains some activities then you cannot change the group of the project.
> - You can update the group of all old projects if those projects have activities that belong to only a single group.

ASSIGNING A DEFAULT PROJECT TO A USER

After creating a project, you can set it as the default project for the particular user group. However, only users of administrators and sysadmin group or the owner of a project can assign a default project to other users of the same group.

After assigning a default group to a user, when the user login Adeptia Suite, all the activities of the user will be in the saved in the default project of the respective user. However, the user can select and change the project while saving the activity, if required.

For example, if you want to assign the project Warehouse_Inventory to a user, you need to perform the following steps.

Steps to assign the default project to a user

1. On the Adeptia Suite homepage, go to **Administer > Setup > User**.

   The *User* Manage page is displayed (see Figure 4).

Figure 4: User Manage page

2. Click the **Create New** link to create a new user. This action will display you the *Create User* page.

3. Enter the values in the respective fields.

> **i** To know how to create a user, refer to the Creating a User section of the Administrator Guide.

4. On the *User Manage* page, select the project that you want to set as the default project for this user from the **Project** drop-down list (see Figure 5).

Figure 5: Create New User

5. Click the **Save** button to save the changes.

> **i** If you want to learn more about the scope of the project, please refer to the Group Level Project Scope section.

Steps to assign the default project to users belonging to multiple Groups

There may be users belonging to more than one group, and you may want to assign the default project to those users. For instance, there are two projects i.e. **Project1** and **Project2** with **Group1** and **Group2** assigned respectively. **User1** belongs to both **Group1** and **Group2.** Now, to assign a default project to **User1,** you need to perform the following steps:

1. Create two groups, for e.g. **Group1** and **Group2**.

> **i** To know how to create a group, refer to the *Creating a Group* section of the *Administrator Guide*.

2. Create two projects, for e.g. **Project1** and **Project2** and assign them respective groups (created in the step above).

> **i** To know how to create a project, refer to the *Creating a Project* section of the Developer Guide.

3. Create a new user who belongs to both **Group1** and **Group2** (see Figure 6).

Figure 6 : Create New User

> **i** To know how to create a user, refer to the *Creating a User* section of the Administrator Guide.

4. Login with this user selecting **Group1** (see Figure 7).

Figure 7: User Login Window

5. On the Adeptia Suite home page, click the *My Profile* link to open the *My Profile* window (see Figure 8).
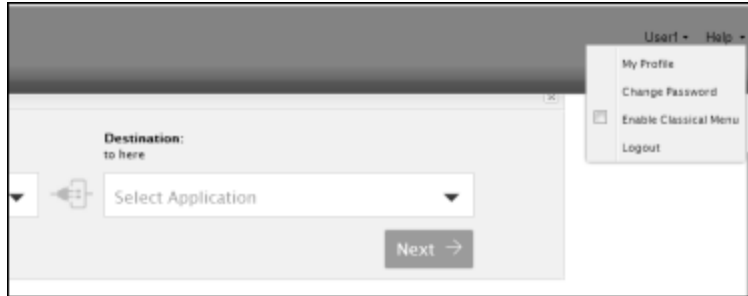
Figure 8: My Profile Link

6.   Click *Edit* to select the project that you want to set as the default project for this user from the **Project** drop-down list (see Figure 9).

Figure 9: Assign Default Project

> **i**   Selected project will remain its default project for **Group1** until the user logins with **Group2** and edits the *Default* project. If the user edits the *Default* project, then It will reset the default project for **Group1**.

7.   Click *Save*.

Steps to assign an existing project to a group

From Adeptia Suite 6.1 onwards, we have moved the project scope to group level. This means that, after installing the latest patch, the Administrator needs to edit and assign all the existing projects to appropriate groups. Please follow the below steps to assign an existing project to a group:

1. On the Adeptia Suite home page, go to **Develop → Projects**. This action will show you the Projects Manage page (see Figure 10).

Figure 10: Project Manage page

2. Click on **Action** and select the **Edit** option from the context menu.

3. Select an appropriate group from the **Group** drop-down list.

4. Click the **Save** button to save the project.

ADDING AN ACTIVITY TO A PROJECT

After creating a Project and assigning the default project to a user, you can add the required activities within your project. To add the activities in your project, you can create a new activity or edit an existing activity. While working with the activity, you need to select the required project and then save the activity. The Adeptia Suite will then add the respective activity to the project that you have selected.

Creating and saving an activity within a project

Consider that you need to create a FTP source activity for the Warehouse Inventory process. To save this activity in the respective Project, you need to perform the following steps.

Steps to add a FTP Source Activity within a Project

1. On the Adeptia Suite homepage, go to **Develop > Services > Source** and then click **FTP**.

2. Click the **Create New** link. The *FTP Source Manage* page is displayed.

3. Enter respective values in all the fields.

4. Expand **Advance Properties** to set the values of the advance properties related with the new FTP source activity.

5. Select the required project from the **Project** drop-down list.

The **Project** drop-down list displays all the projects within the Adeptia Suite including the default project '**Default**'.

> ℹ️ By default, the **Project** drop-down list displays the default project of the logged-in user as the selected project. To know how to assign a default project to a user, refer to Assigning a Default Project to the User section.

If you do not want to add your activity in any of the listed projects or if you do not select any project while creating or editing the object then by default, the object will be added in the default project of the logged-in user (see Figure 11).

Figure 11: FTP Event Manage page

6. Click the **Save** button to save the FTP source activity.

This action will display you the new FTP Event activity on the *FTP Manage* page. The respective *Project Activity Listing* page will also contain this activity. As you have added this activity in the Warehouse_Invenory project, the *Project Activity Listing* for this project will display this activity.

	Click to expand the activity. You can now manage this activity from the Project Activity Listing page. Similarly, you can create and add multiple activities within a project.
	If you want to learn more about the scope of the project, please refer to the Group Level Project Scope section.

MANAGING ACTIVITIES WITHIN A PROJECT

After adding activities to the project, you can manage these activities from within the respective project. The *Project Activity Listing* page displays all the activities of a project in rows. You need to single click on the project to view the activities within the project. This page also enables you to view an activity, open the activity in Edit mode, and delete the activity. In addition, you can view the dependencies and check-in the activity if you have enabled versioning in your Adeptia Suite installation.

	Note that you cannot create an activity from the *Project Activity Listing* page. To know how to create a new activity, please refer to the *Creating an Activity* section. You can only add and manage activities from this page.

The *Project Activity Listing* page lists all the similar activities in a group. The group heading displays the type of activities along with the number of activities within that group. For example, all the file source activities will be grouped together and all the File Target activities will be grouped together. You can group together activities on the basis of any column present on the Manage Activity page.

In addition, this page has the following two buttons:

- **Move**: By default, this button is disabled. This button is enabled when you select any activity(s). It enables you move the selected activity to any other project, if required. Only users of administrators and sysadmin groups can perform the move operation.
- **Back**: This button closes the *Project Activity Listing* page and opens the *Project Activity Listing* page.

Steps to Manage Activities within a Project:

1. On the **Project Manage** page, single click on the project to view the list of activities included within the project (see Figure 12).

Figure 12: Project Manage page

This action will display you the *Project Activity Listing* page. Note that the activities are grouped in alphabetical order and every group heading displays the total number of activities within that group (see Figure 13).

Figure 13: Project Activity Listing page

2. Click the group heading name to view the list of activities within that group (see Figure 14).

Figure 14: Project Activity Listing page

3.   Right-click the activity to view the context menu of an activity.
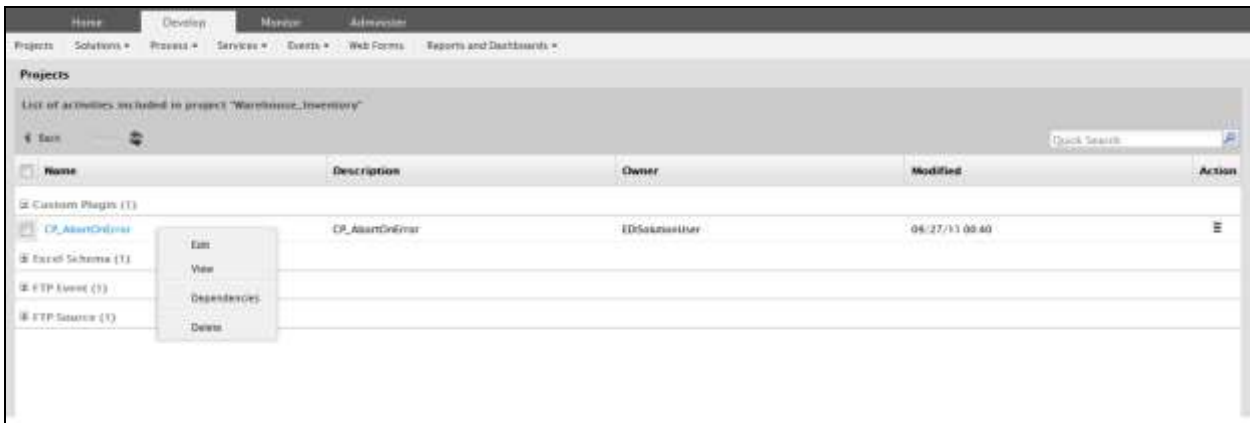
Figure 15: Actions menu to Manage Activities

4.   You can also click the **More Actions** icon under the **Action** column to view the menu (see Figure 16).

Figure 16: More Actions menu to Manage Activities

5.   Select the operation that you want to perform on the respective activity.

> ℹ️ If you want to learn more about the scope of the project, please refer to the Group Level Project Scope section.

MOVING OBJECTS OF A PROJECT

At times, you may also want to move the objects of project from one project to another project. The *Project Manage* page enables you to achieve it.

> ℹ️ Only users of sysadmin or the groupadmin type can perform the Move operation. sysadmin type user can move a project from one group to another, whereas groupadmin type user can move a project within a group only.

Steps to Move all Objects of a Project

1.   Login as the user of sysadmin or as the groupadmin.

2.   On the *Project Manage* page, right click on the project whose objects you want to move to another group.

3.   Select the **Move** menu option from the context menu of the project (see Figure 17).

Figure 17: Project Manage Screen (Move Option)

4.   Click the **Move** button. This action will display you the *Project Move* screen (see Figure 18).
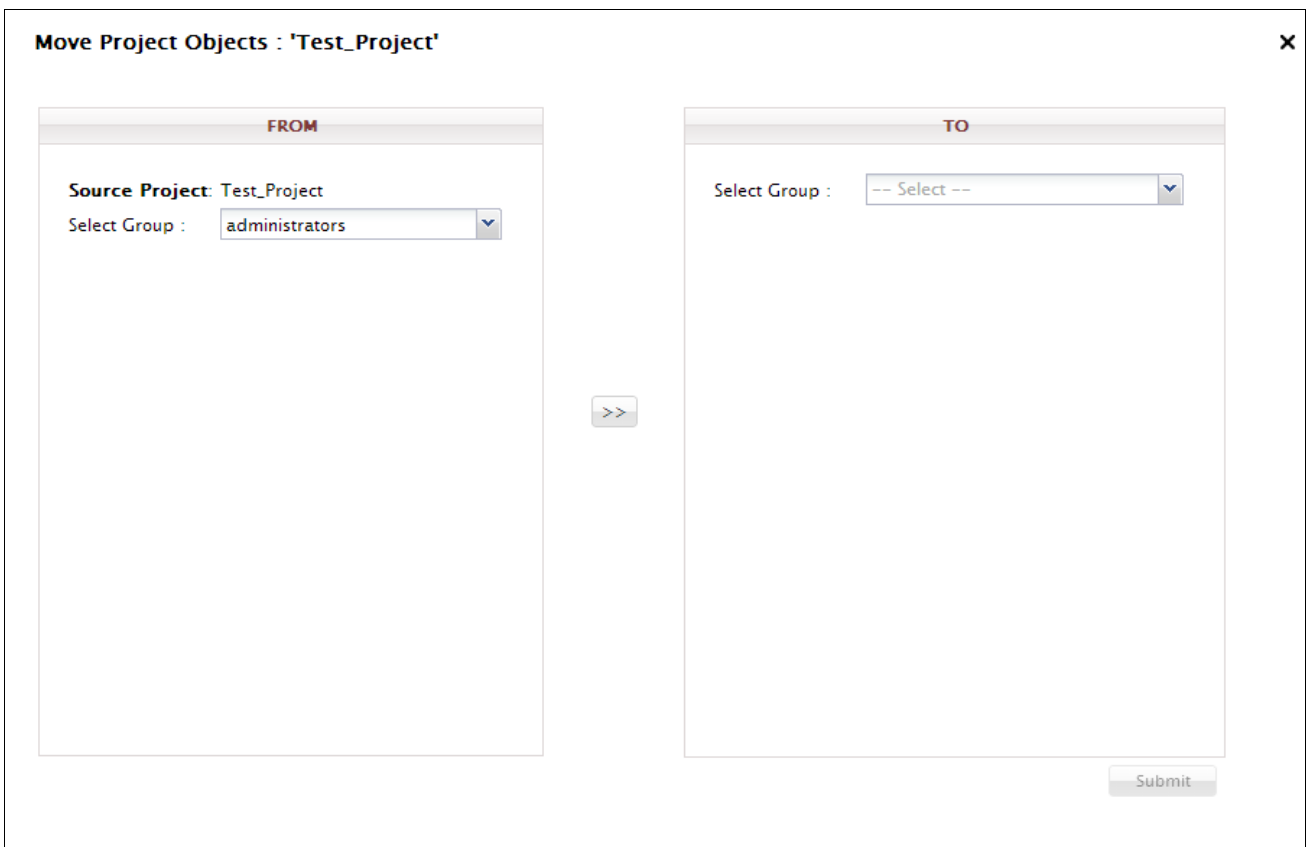
Figure 18: Project Move Screen

5.   From the **Select Group** drop-down list, select the group to which you want to move the objects of your project.

6.   From the **Select Project** drop-down list, select the project to which you want to move your activities.

7.   From the **Select User** drop-down list, select the user to which you want to assign your activities (see Figure 19).

Figure 19: Project Move Screen (Submit)

8. Click the **Submit** button. This action will move and add the objects to the selected project.

   A confirmation status message is displayed (see Figure 20).
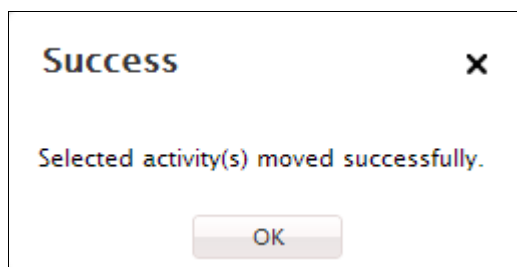
Figure 20: Status Message

9. Click the **OK** button to close the application message.

> If you want to learn more about the scope of the project, please refer to the Group Level Project Scope section.

MOVING ACTIVITIES

At times, you may also require using the activity for some other project into your project or vice-versa. The Project Activity Listing page enables you to move an activity(s) from one project to another project. You can move all or the selected activities of a project to another project. This will move the selected activity(s) to the selected project.

> **i** Only users of administrators and sysadmin group or the owner of a project can perform the Move operation.

Steps to Move Activity(s) to another Project

1. Login as the user of administrator group or as the owner of the project.

2. On the *Project Manage* page, click on the project from which you want to move the activities.

3. On the *Project Activity Listing* page, expand the required group headings to select the activity(s) that you want to move to another project (see Figure 21).

Figure 21: Project Manage Screen

> **i** The **Move** button is enabled at the time when a single activity is selected.

4. Click the **Move** button. This action will display you the *Activity Move* screen (see Figure 18).
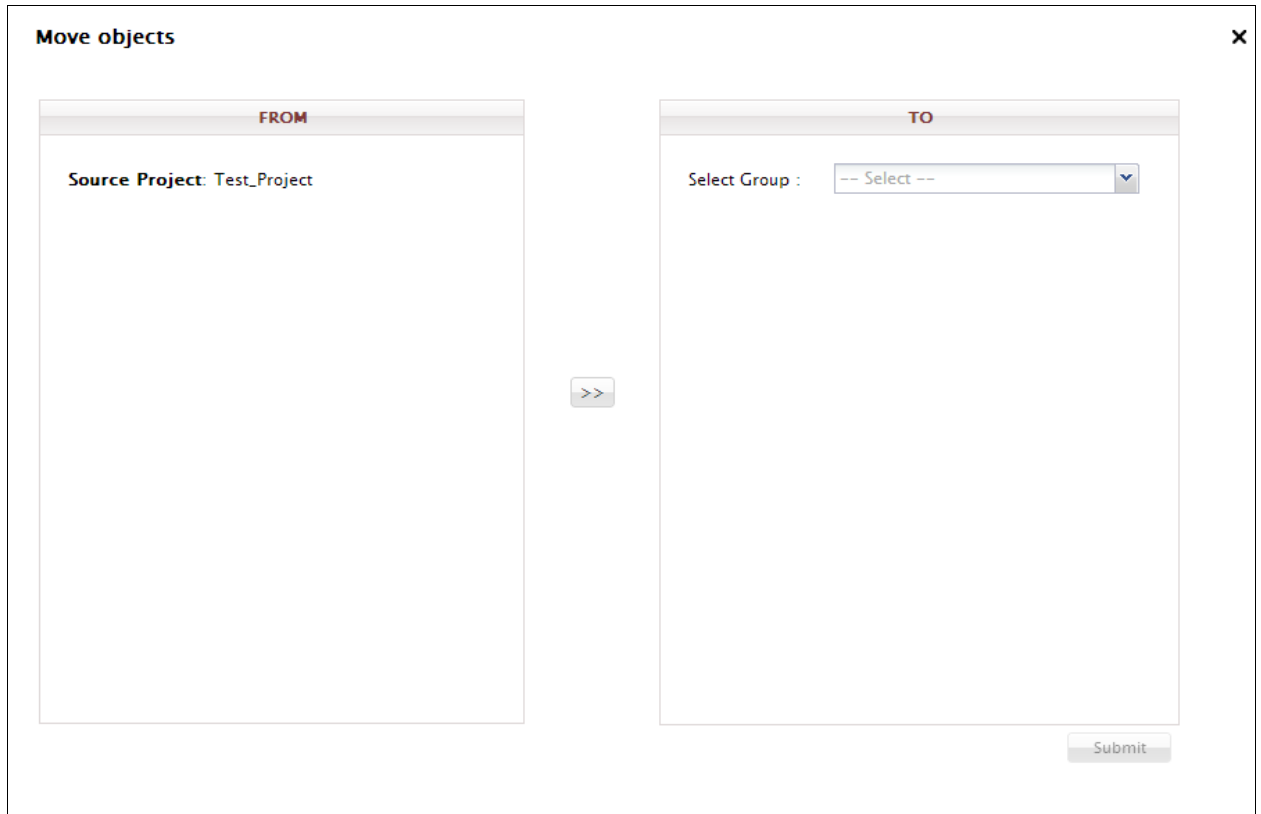
Figure 22: Activity Move Screen

5. Select the group to which you want to move the selected activities. The drop-down list displays all the groups within the Adeptia Suite including the **administrators** group (see Figure 23).
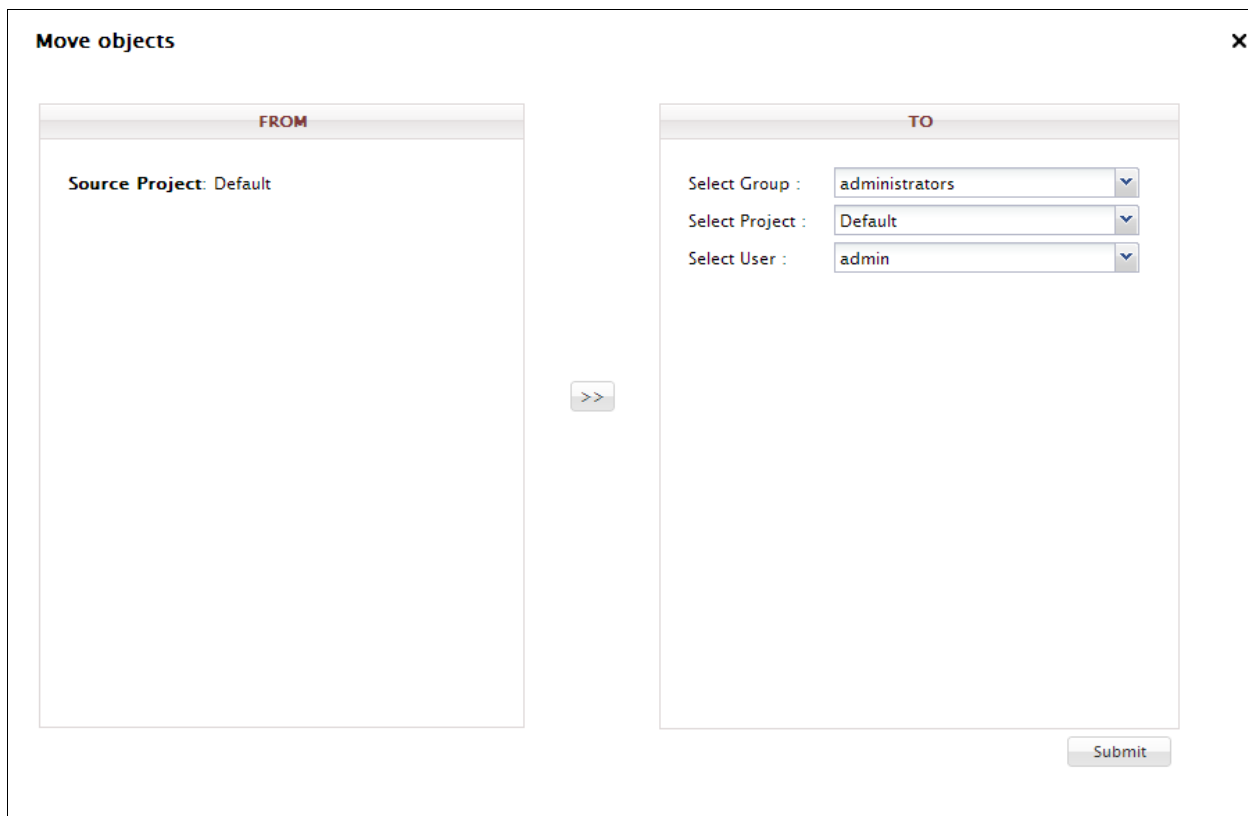
Figure 23: The Activity Move page

6.   Click the **Move** button to finally move the activity. The activity will be moved and added to the selected group.

A status application message is displayed (seeFigure 24).
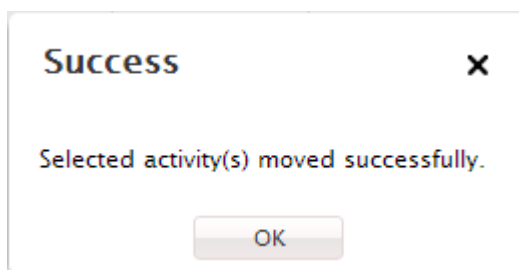
Figure 24: Status Message

7.   Close the application message. This action will display you the *Project Activity Listing* page (see Figure 25).

Figure 25: Project Activity Listing page

> ℹ The current project will not display the moved activity(s) on the *Project Activity Listing* page.

8. Click the **Back** button to return to the *Project Manage* page.

9. Click the project that you selected on the *Move Activity* page to view the activity(s) that you moved (see Figure 27).

Figure 26: Project Manage page

> ℹ If you want to learn more about the scope of the project, please refer to the Group Level Project Scope section.

DELETING A PROJECT

At times, when your purpose of creating a project has been resolved or due to any other reason, you may require to delete a project from Adeptia Suite. Note that only users of administrators and sysadmin group or the owner of a project can perform the Delete operation. However, before deleting a project, you need to ensure that a project does not have any activities. Therefore, you need to delete the activities but ensure that the activities do not have any dependencies or you need to move those activities to some other project. If you do not perform the same, while deleting a project, you will be automatically directed to the *Move Activity* screen where you are required to select another project.

Steps to Delete a Project

1. Login as administrator or sysadmin group.

2. On the *Project Mange* page, select the project you want to delete (see Figure 17).

Figure 27: Project Manage page

> When you select a project only then, the **Delete** button is enabled.

3. Click the **Delete** button.

This action will display you a confirmation application message (see Figure 28).
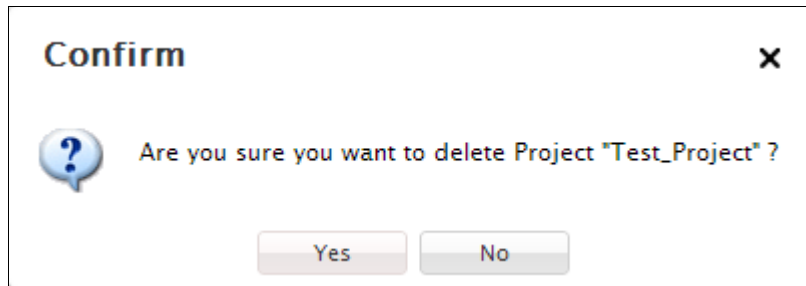
Figure 28: Application Message

4. Click the **Yes** button to delete the project. This action will display you the *Move Activity* screen (see Figure 29).
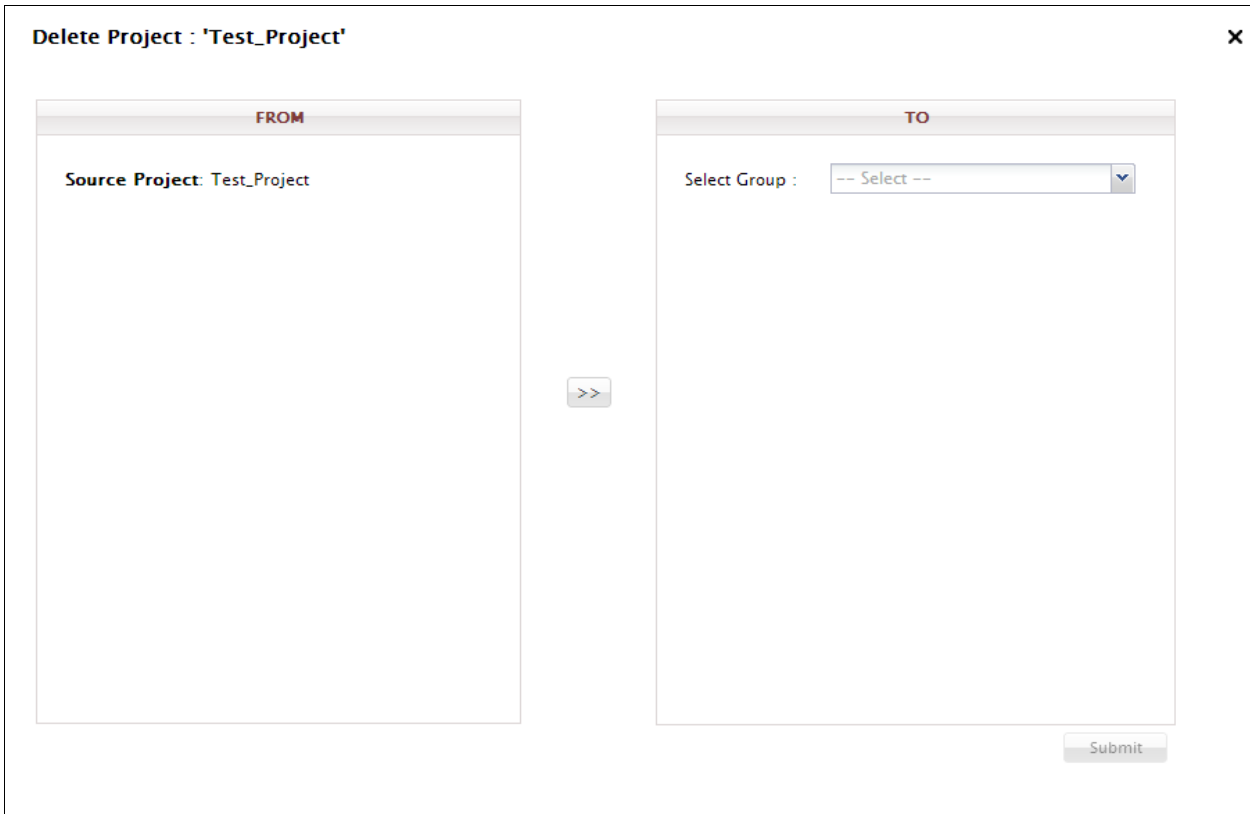
Figure 29: Move Activity page

5. Select the project in which you want to move the activities of the current project (see Figure 30).
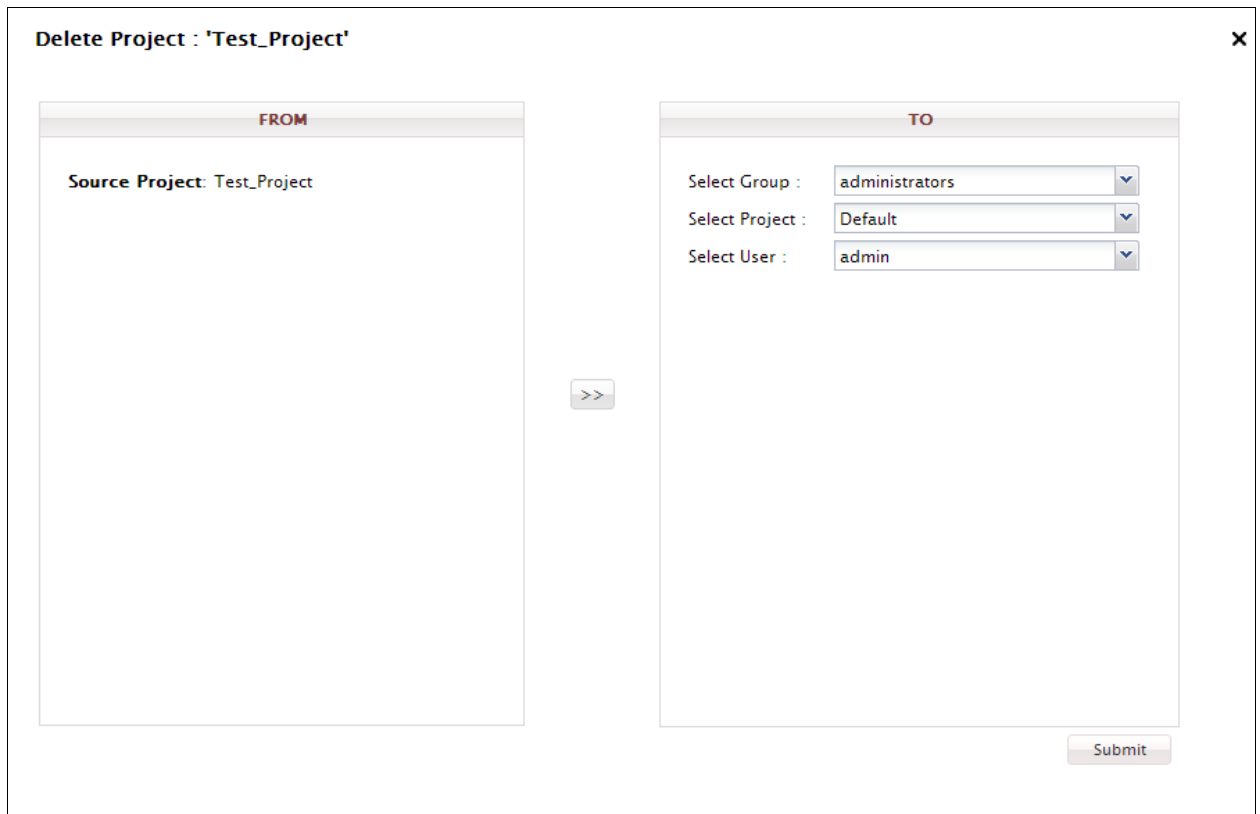
Figure 30: Move Activity Screen (Submit Screen)

6.   Click the **Submit** button to move the activities. A confirmation application message is displayed (see Figure 31).
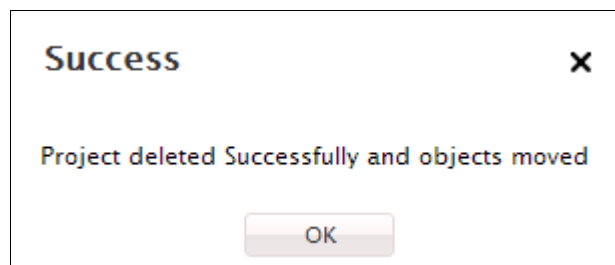
Figure 31: Application Message

This action will successfully delete a project.

If you want to learn more about the scope of the project, please refer to the Group Level Project Scope section.

DESIGNING WEB FORMS

Human Workflow task or as a form, which is added as a link in the Workspace menu.

You can create Web Forms and trigger process flows or customize using the Web Forms. Adeptia Suite also allows you to integrate a custom application into the Adeptia Suite using its graphical user interface. You can upload any custom JSP or HTML file, written to serve a specific purpose. This feature facilitates smooth management of multiple JSPs and HTML files, saves time and allows seamless integration into the Adeptia Suite.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓		

This chapter describes the following tasks:

- Creating a Web Form
- Activating a Web Form

CREATING A WEB FORM

A Web Form can be created in three ways:

- Using Template
- Entering HTML Code manually
- Using Rich Form
- Using Wizard Form

However, Adeptia suite enables you to upload the customize form. There is no limit to the no. of forms that can be added to the Adeptia Suite.

Steps to create a Web Form

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Web Forms**.

The *Manage Web Forms* screen is displayed (see Figure 32).
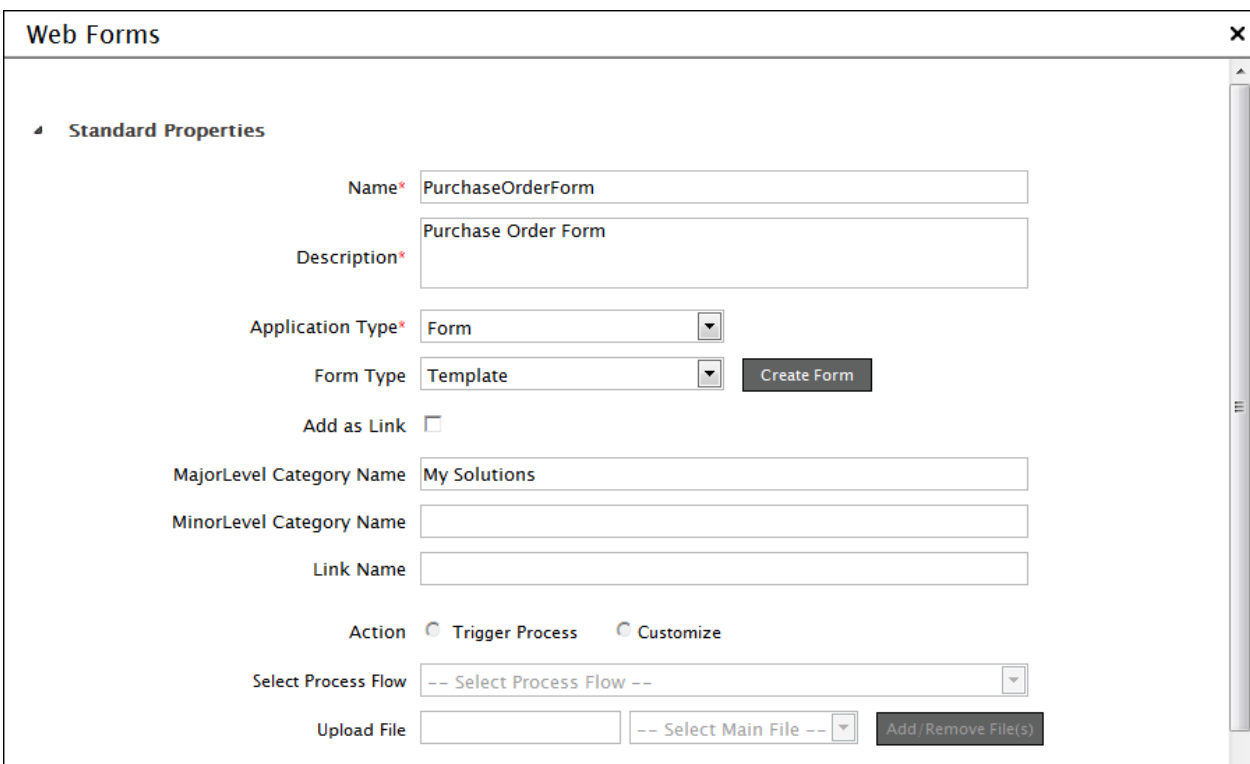
Figure 32: Introduction Screen

3. Click the **Create New** button. The **Create Web Forms** screen is displayed.

4. Enter the name and description of the Web Form in the textboxes **Name** and **Description** respectively.

5. Select the application type from the dropdown list **Application Type**. The dropdown list **Application Type** has the following two options:

   - Form
   - Custom

   By default, the option **Form** is selected (see Figure 33).

Figure 33: Create Web Form

> If you select the application type **Form** then the radio button **Trigger Process** is enabled. If you select the application type **Custom** then the dropdown list **Form Type** is disabled and the radio button **Customize** is enabled.

6. If you select to create the **Form** type application, perform the following steps:

    i. Select the method to create the form from the dropdown list **Form** *Type*. The methods used to create forms are described in the table below.

Table 1: Form Types

Form Type	Description
Template	When Template is selected, a *Form template* opens, where you can define the form.
Manual	When *Manual* is selected, you need to write complete HTML code for the form manually.
Rich Form	When *Rich Form* is selected, you can create and design a rich Web Form using the *Frevvo* tool.

    ii. To design the form using a template, select **Template** from the dropdown list. **Form Type** For details, refer to the

Creating Web Form Using Template section.

    iii.   To design the form manually, select **Manual** from the dropdown list. **Form Type** . For details, refer to the *Creating Web Form Manually* section.

    iv.   To design the form using a rich form, select **Rich Form** from the dropdown list **Form Type**. For details, refer to the *Creating Web Form Using Rich Form* section.

    v.   Click the **Create Form** button. This displays the selected design form screen. Create the form as desired.

7. If you select to create the **Custom** type application, perform the following steps:

    i.   Select the main file from the dropdown list **Select Main File**.

    ii.   Click the **Add/Remove Files** button to add the customized file.

> **i**   There is no limit to the number of files that you can upload into the Adeptia Suite.

8. Select the **Add as Link** checkbox, if you want the custom form to appear as a link in the Workspace menu.

9. The Major category link will always be populated as MySolutions. You cannot edit this field.

10. Enter the minor category name to in the **MinorLevel Category Name** field. For example, if you enter **Online Forms** in this field, it will be considered as a **MinorLevel Category Name**.

11. Enter the name of the link in the **Link Name** field. For example, you can enter the link name as **Purchase Forms**. Under this link, you can upload the Online Purchase form. Thus, the hierarchy for the above example will appear as**:**

My Solutions -> Online Forms -> Purchase Forms -> Purchase Forms

Once you select the **Add as Link** option, the **Action** fields get activated. You can set an action once this Web Form is executed. You can either trigger a process flow or by uploading custom jsp files.

12. To trigger a process flow, select the **Trigger Process** radio button and select the process flow that you want to trigger, from the dropdown list. Alternately, to upload custom jsp files, select the **Customize** radio button.

13. Click **Add/Remove File(s)** button to upload the custom JSPs, HTMLs and support files. This displays the **Add/Remove Files** screen (see Figure 34).

Figure 34: Add/Remove Files

14. Click the **Browse** button to select the file to be uploaded. Once it is selected, it appears in the **Browse File** field.

15. Click the **Add File** button to add the selected file. This displays the file with a checkbox. Similarly, you can add multiple files to be uploaded (see Figure 35).

Figure 35: Added File(s)

ℹ There is no limit to the number of files that you can upload into the Adeptia Suite.

16. To remove the uploaded file, mark the checkboxes of the files that you want to remove and click **Remove Files** link. To select all files, click **Select All**.

17. Click the **Finish** button. This closes the **Add/Remove Files** screen and displays the selected files in the **Customize** field (see Figure 36).

Figure 36: Uploaded File(s)

> You can upload only JSP and HTML files and all their supported classes and jar files using this feature.
>
> Once the files are uploaded, if an error occurs due to the connection being disconnected, then the system displays an error message.
>
> When you upload the files, a folder is created with name as specified in *Link Name* field, in the `../../ServerKernel/web/custom` folder and the uploaded file are copied into this directory. If your application is referring to any JS, CSS or image file, you need to mention the path of these files relative to custom folder. Following is the sample HTML file.
>
> ```
> <Html>
> <TITLE> Adeptia BPM Server </TITLE>
> <script type="text/javascript"
> src="Custom/ErrorReports/calendar.js"></script>
> <Body>
> <H1>
> Hi!
> ```

```
</H1>
<img src='Custom/ErrorReports/nature2.jpg'>
</Body>
</Html>


Here ErrorReports is the name of the link.
```

18. All the uploaded files are displayed in the **Main File** dropdown list. Select the file that you want to select as the main file from this list. If you do not select any file and click the **Save** button, the following application message is displayed (see Figure 37).
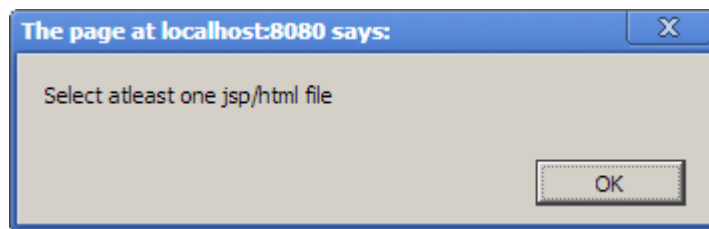
Figure 37: Application Message

19. Click **Advance Properties** to set the values of the advance properties related with Web Form.

20. Select the project under which you want to add this Web Form. By default, it is added in the default project of Adeptia Suite. The default project of Adeptia Suite is *Default*.

21. Select the owner of the Web Form. The default owner of the Web Form is administrator.

22. Change the permission levels of the owner as per your requirements (see Figure 38).

Figure 38: Web Form Advance Properties

23. Click the **Save** button.

> You can create a Custom Application too from the **Create Web Form** screen. Select **Custom** from the **Application Type** dropdown list in the **Create Web Form** screen. This deactivates the **Form Type** field and the **Trigger Process** option. Enter the details as required and upload the custom jsp files.

Creating Web Form Using Template

Steps to create Web Form using Template

1. On the *Create Web Form* screen, select the **Template** option from the **Form Type** dropdown list.

2. Click the **Create Form** button. This displays the *Design Form using Template* screen (see Figure 39).

Figure 39: Design Form using Template

3. To define header, click the **Define Form Header** button. The following screen is displayed (see Figure 40).

Figure 40: Define Header

4. To add an image into header, select the image from **Available Images** dropdown list and click **Add Image** button.

5. To upload any new image in the list of Available Images, browse the required image and click **Upload Image** button. The selected image is added to the **Available Images** list.

6. Select header type from **Header/Paragraph** dropdown list and click **Add** button. Tags for selected header are added into HTML area. Enter the required text between the header tags.

7. To change the fonts of the text, click **Add Font** button and select the required font and color.

8. To add link for File Download/Upload option, click **Add File Download/Upload** button.

9. Click the **Submit** button to return to *Design Form using Template* screen.

10. Repeat step 3 to 8 to design other portion (except Form) of the Web Form.

11. To define the form, click **Define Form** button. The *Define Form* screen is displayed (see Figure 41).

Figure 41: Define Form

12. Enter the name of the variable header in the textbox **Variable Header**.

13. Enter the name of the variable, which will be displayed in the HTML page, in the textbox **Display Name**.

14. Enter the name of the variable, corresponding to Display Name in the *textbox* **Variable Name**.

15. Select the type of the field from the dropdown list **Type**.

16. Select the property of the field whether Read Only or Editable from the dropdown list **Property**.

17. Enter the tokenizer (e.g. comma) in the textbox **Tokenizer**.

18. Enter the possible values of the field separated by the tokenizer character in the textbox **Values**.

19. Select the **Mandatory** checkbox against the field that you want to define as mandatory entry field.

> If the property of the variable is selected as **Editable**, variable is exposed in Process Designer, while creating process flow using this activity and you can further change its value.
>
> In case the property is of the variable is selected as **Read Only**; you have to create the

> variable with same name in Process Designer. Otherwise Human Workflow task will give an error.

20. After defining variables for all required field, click **Submi**t button to return to the **Design Form using Template** screen.

> **i**   Click **Preview** button to view a preview of the new HTML template, before submitting it.

> **i**   By default, the new Web Form opens in the workspace area. To open it in a new screen, select the **Open in New Window** checkbox in the *Form Properties* section of the **Design Form using Template** screen.

21. Once you have created the template, click the **Submit** button. This returns control to the *Create Web Form* screen.

Creating Web Form Manually

Steps to create a Web Form manually

1. On the *Create Web Form* screen, select the **Manual** option from the **Form Type** dropdown list.

2. Click the **Create Form** button. This displays the *Design Form* screen which can be manually designed (see Figure 42).

Figure 42: Design Form Manually

3. Enter the HTML code in *HTML Code* field to design the form. Sample HTML code which is used to design a form is displayed below (see Figure 43).

```
<TABLE height="90%" cellSpacing=0 cellPadding=0 width="100%"
border=0>
 <TBODY>
  <TR height="15%">
    <TD colSpan=3>
      <H1 align=center><FONT face="Times New Roman"
color=brown size=8>Adeptia
      BPM Server</FONT></H1></TD></TR>
  <TR height="70%">
    <TD width="15%">
        </TD>
    <TD width="70%">
      <TABLE height="100%" width="100%" border=0>
        <TBODY>
        <TR height=10>
          <TD>
            <H1 align=center><FONT face="Times New Roman"
color=brown
            size=6>Employee Management Form
</FONT></H1></TD></TR>
        <TR height=80>
```

```
        <TD>
          <FORM name=HTMLForm>
          <TABLE>
            <TBODY>
            <TR>
              <TD>Employee Id</TD>
              <TD><BR><INPUT name=Employeeid
type=text></TD></TR>
              <TR>
              <TD>Employee Address</TD>
              <TD><BR><INPUT name=Employeeaddress
type=text  ></TD></TR>
              <TR>
              <TD>Employee Work Experience</TD>
              <TD><BR><SELECT name=Workexperience><OPTION
value=1
                selected>One</OPTION><OPTION
value=2>Two</OPTION><OPTION
                value=3>Three</OPTION><OPTION
            value=4>Four</OPTION></SELECT></TD></TR>
            <TR>
              <TD>Are these details are fine?</TD>
              <TD><BR><INPUT type=radio value=Yes
                name=Checkdetails>Yes<INPUT type=radio
value=No
                name=Checkdetails>No</TD></TR>
            <TR>
              <TD colSpan=2><INPUT type=submit value="Save
Task" name=partialSubmit>
<INPUT type=submit value="Complete Task"
name=fullSubmit></TD></TR></TBODY></TABLE></FORM></TD></TR>
        <TR height=10>
          <TD>
            <H1 align=center><FONT face="Times New Roman"
color=brown
            size=4>Press Save Task button to save this form
</FONT>
            <H1 align=center><FONT face="Times New Roman"
color=brown
            size=4>Press Complete Task button to complete
this form
            </FONT>
```

Figure 43: Sample HTML Code

While creating a form, certain points need to be considered:

- User must specify HTML Form Name.

- User must specify only one Complete Task button. There should not be any other action i.e. Cancel or Back etc.
- User can also specify Save Task button. Save button is used when user wants to save the partial completed task.
- User must specify fullsubmit and partialsubmit variable for Complete Task and Save Task button respectively.
- There could be any number of radio buttons.
- Variable defined in the HTML Code is automatically gets created in the Process flow.

4. Once you have entered the HTML code, click **Submi**t button. This returns control to the Create Web Form screen.

When writing the HTML code, at times some business scenarios cannot be addressed by simple HTML code. To implement these scenarios, you need more dynamic behavior of Human Workflow web pages and interaction with server end to get the required information. The Adeptia Suite allows you to integrate the custom web application that you have created using JSP or AJAX.

Integrating Custom Web Application in Human WorkFlow

To integrate the custom web application, you need to take care of the following points:

- While writing HTML code for a Workflow activity, you need to define a hidden variable named PID using following code:

```
<input Type=hidden name=PID readOnly>
```

This variable is used to pass the *Process Flow ID* (unique value generated for each execution of Process Flow) to the custom web application, which you have created.

- Create a hyperlink to call your custom web application and the corresponding Java script. The sample code (see Figure 44) creates a "Review" link in the Workflow page. Clicking the "Review" link calls the "review" function.

```
<a href='javascript:review();'>
<font color=blue>Review</font></a>
```

```
<scripPractice Form 1Practice Form 1Practice Form 1Practice Form 1Practice
Form 1Practice Form 1Practice Form 1Practice Form 1Practice Form 1>
function review()
{
var pid=document.HTMLForm.PID.value;
var vWinTrans=window.open("custom/Review.jsp?PID="+pid
,"_blank","toolbar=yes,location=no,directories=no,status=no,menubar=yes,scro
llbars=yes,resizable=yes,copyhistory=no");
}
</script>
```

Figure 44: Sample Code for "review" Function

In the above mentioned code, *Review.jsp* is the custom jsp, which is called when you click the "Review" link in the Workflow page.

- In the custom web application, add the following code to access the value of Process Flow ID.

```
                        string pid=request.getParameter("PID");
```

- To create instance of class transactioninformation add the following code.

```
TransactionInformation ti=new TransactionInformation(request,session);
```

- A custom web application allows you to perform any kind of operation that is required. In addition, you can use Adeptia API to perform operations like logging information in process flow log, viewing variables, service objects etc. For Adeptia API documentation contact support@adeptia.com.

- Create a subfolder "custom" in *<InstallFolder>/ServerKernel/web* and copy your custom JSP in the "custom" folder.

Creating Web Form Using Rich Form

You can create a rich internet form and use it as an HTML page in an activity. This form can be used for a Human Workflow activity or a custom application. Adeptia supports an external tool, the **Frevvo** tool for creating a rich form. For details on a rich form by Frevvo, refer to
http://docs.frevvo.com/d/display/frevvo53/Form+Setting+Properties.

Steps to create a Web Form using a Rich Form

1. On the *Create Web Form* screen, select the **Rich Form** option from the **Form Type** dropdown list.

2. Click the **Create Form** button. This displays the *Adeptia Rich Form* screen (see Figure 45).
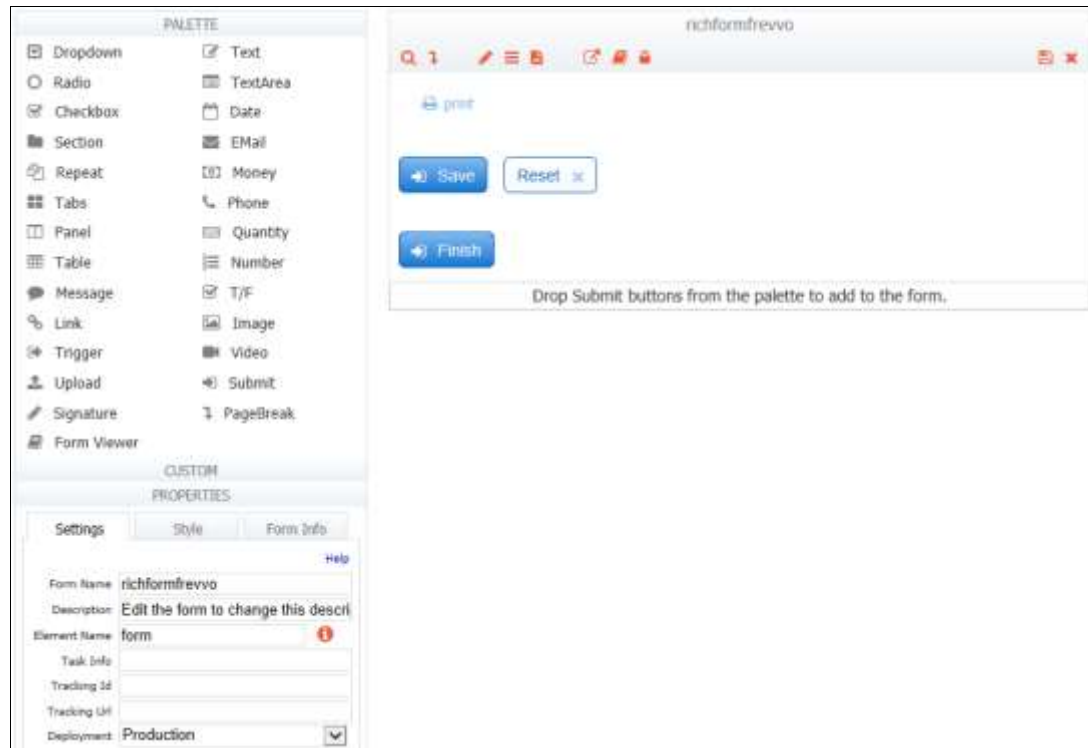
Figure 45: Adeptia Rich Form

This screen is divided into two parts. The left pane displays a palette of controls and their properties. The right pane displays a blank form. You can create a form by dragging the controls in the left pane and dropping them in the right pane. You can edit the control properties and also rearrange the controls.

When you drag and drop a control in the form canvas, it is displayed as a field with the control label. You can edit and customize the control by editing its properties that are displayed in the **Properties** section in the left pane. You can edit properties such as the control name or control type.

Additionally, you can add a name for the control in the **Name** property, which is created as a variable in the process flow context and used as a process flow variable. For example, if you add a text control and add var1 in the *Name* property, var1 is created as a process flow variable and used in the process flow, when required.

Furthermore, you can customize the control by defining its maximum length and hints, error or help messages. You can also manipulate its visibility and validations such as mandatory and password entries.
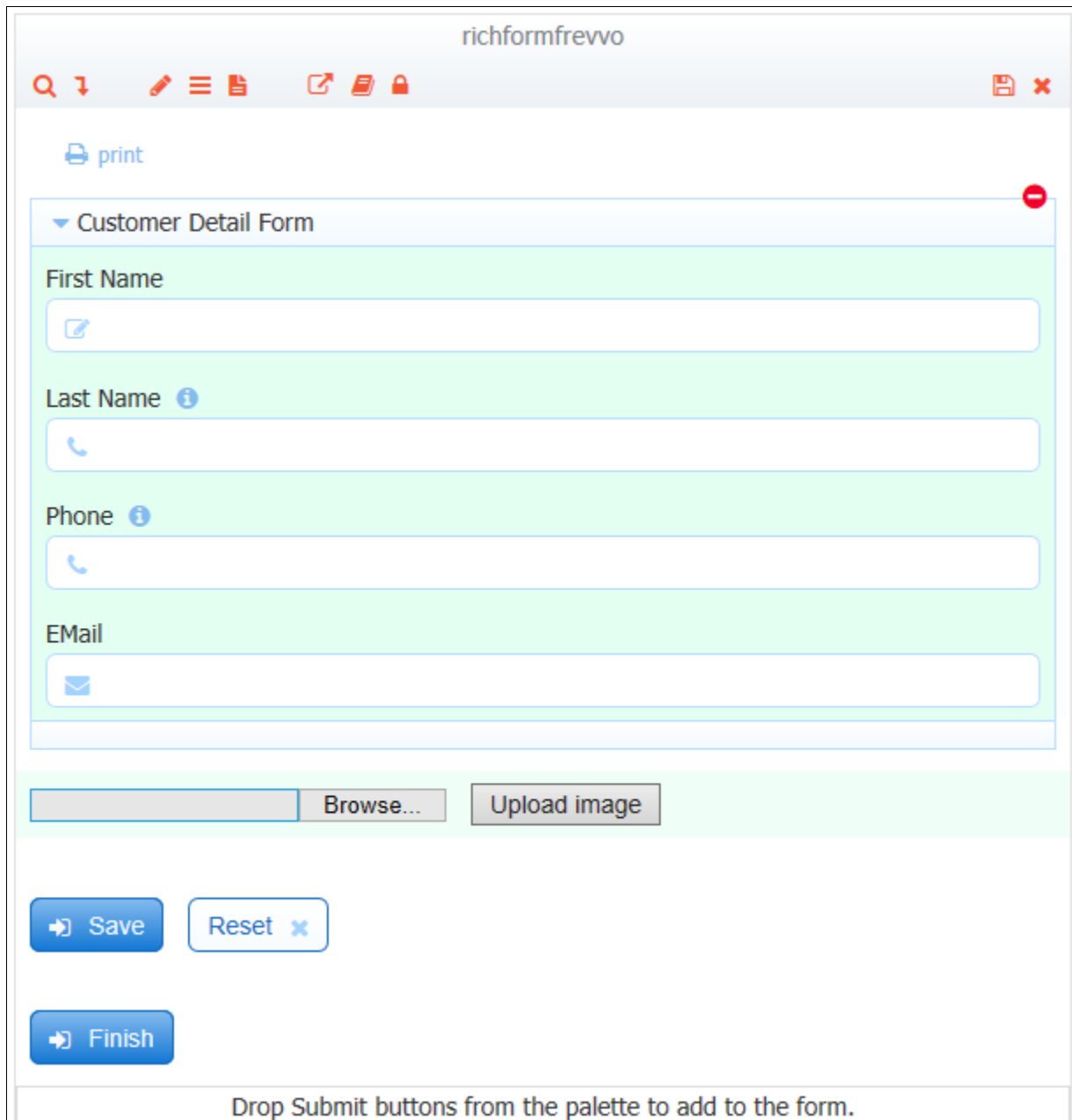
> The properties can vary for each control. For details on each property, refer to http://docs.frevvo.com/d/display/frevvo53/Control+Properties.

3. You can also customize the appearance and style of each control by editing the style properties displayed in the **Style** tab in the **Properties** section (see Figure 46).

Figure 46: Style Properties

4. Additionally, you can also customize the style of the entire form by selecting the form and then clicking the **Style** tab.

5. A sample created rich form is displayed in Figure 47.

Figure 47: Sample Rich Form

> **i** In the rich forms, you find Styles instead of Themes from Adeptia Suite Version 6.2 onwards .

6. When you deploy the old-rich form objects in any Adeptia Suite version above 6.2, then:

- The style of the form changes. To reset the style:
    - Click the menu bar of the form.
    - From the left panel, click the Properties option.

- Go to Style tab.
- Select the required style from the Style dropdown list.

- The **Save**, **Reset**, and **Finish** buttons are displayed on the form. To hide these buttons:
    - Mouse over the button that you want to hide.
    - Click on the highlighted background.
    - From the left panel, click the Properties option.
    - Go to Settings tab.
    - Uncheck the Visible Checkbox.

> **i** Below version 6.2, the Submit and Reset buttons are displayed as disabled. You can
> remove these buttons from the form by changing its theme property. To do this, select
> the form and click the Style tab. Then, select ClearThemeWithHiddenSubmitButtons
> in the adeptia's themes, from the Theme dropdown list.
>
> If you want the form to trigger a process flow, then you need to select the
> ClearThemeWithHiddenSubmitButtons
> theme.

> **i** You can also edit other form properties such as enable print settings for the form, display
> **Powered by frevvo** logo in the form, etc. by selecting the form and clicking Settings tab.

7. Before saving the form, you can preview it in HTML, by clicking the **Preview** button. You can also define rules to dynamically modify the behavior of the form by clicking the Rules button. For more details on creating rules, refer to http://docs.frevvo.com/d/display/frevvo53/Working%2bwith%2bRules.

8. Once you save the form, the control is taken back to the **Create Web Form** screen.

9. Select the **Add as Link** checkbox, if you want the Rich form to appear as a link in the Workspace menu.

> **i** When you fill up a form and submit it, an XML file containing this data is generated
> in the process flow repository. The files uploaded in the web form also get stored there. You
> can access this data through the Process Flow using Context Source activity.
>
> To use these files in the process flow, follow the below steps:
>
> - Set the **Document Repository** property of the Context Source activity to **True**. **File Name (with full path)** dropdown is then visible.
>
> - There are two values in the dropdown list by default:
>   - *$$FORM_DATA$$*:
>   To access the XML file you need to select this option.
>
>   - *$$FORM_UPLOADED_FILE_NAME$$*:

> To access the uploaded file you need to select this option.
>
> If the user uploads a single file, it gets stored in the **HW** folder inside the repository. However, in case of multiple files a zip file that contains all the uploaded files is stored in the **HW** folder with FORM_UPLOADED_FILE.zip name. To use a specific file from the zipped files, user needs to use **Custom plug-in**.

Creating Web Form Using Wizard Form

You can create a Wizard form when you want to include multiple forms within a form. It is a flow where you can create both multi-page forms and workflows that route your form through an approval process collecting digital signatures along the way. Adeptia supports an external tool, the **Frevvo** tool for creating a wizard form. For details on a wizard form by Frevvo, refer to http://docs.frevvo.com/d/display/frevvo53/Flows+Home+Page.

Steps to create a Web Form using a Wizard Form

1. On the *Create Web Form* screen, select the **Wizard Form** option from the **Form Type** dropdown list.

2. Click the **Create Form** button. This displays the *Adeptia Wizard Form* screen (see Figure 48).
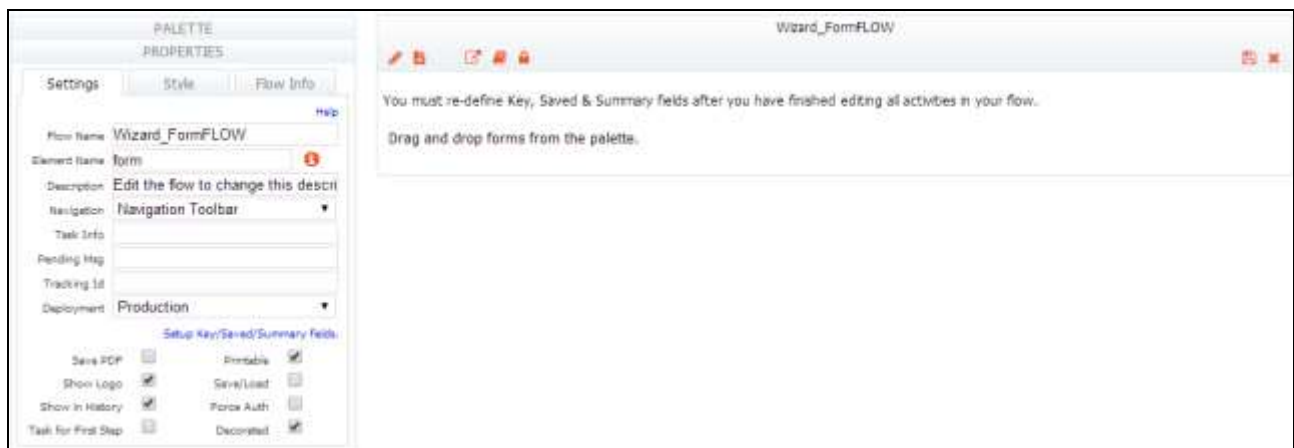
Figure 48: Adeptia Wizard Form

This screen is divided into two parts. The left pane displays a palette of controls (including forms) and their properties. The right pane displays a blank flow/form. You can create a flow by dragging multiple controls from the left pane and dropping them into the right pane. You can rearrange the controls and also edit the control properties.

3. A sample created wizard form is displayed in Figure 49.
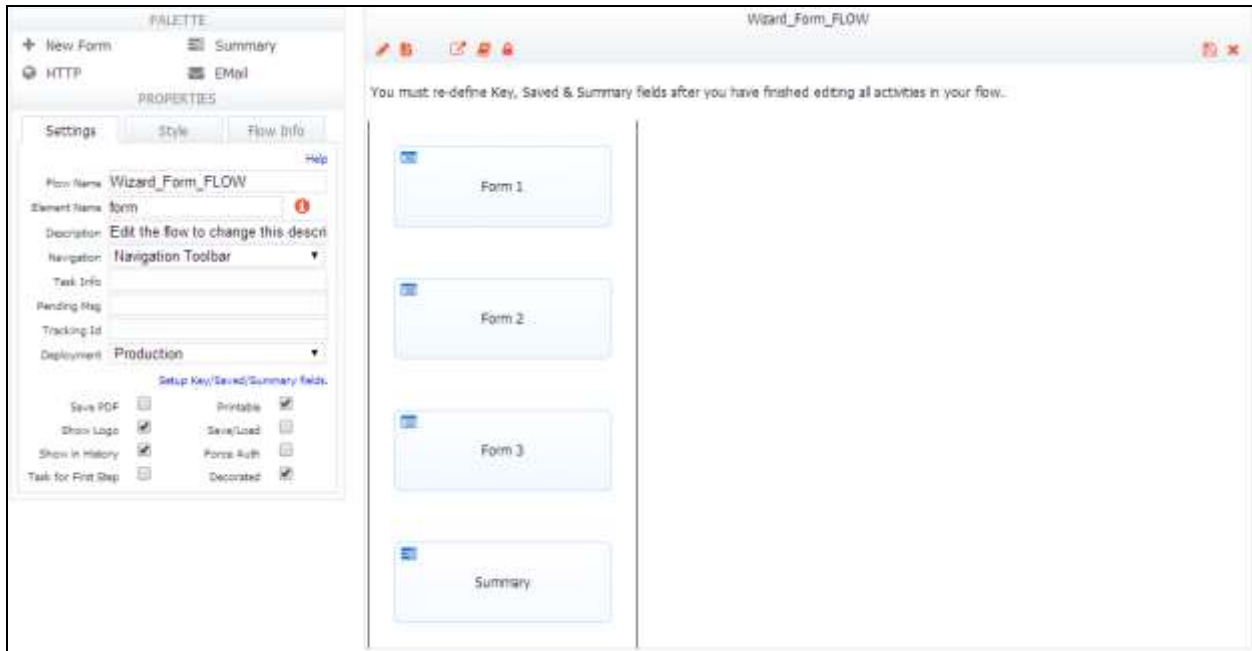
Figure 49: Sample Wizard Form

> ℹ️ You can also edit other form properties such as enable print settings for the form, display **Powered by frevvo** logo in the form, etc. by selecting the form and clicking Settings tab.

When you drag and drop a form control into the flow canvas, it is displayed as a field. You can edit and customize this control by clicking the edit icon (see Figure 50). A pallet with more controls is then visible. You can include these controls to create a form within a flow. Just like the rich forms, you can also edit the properties displayed in the **Properties** section of the left pane. You can edit properties such as the control name, control type etc.
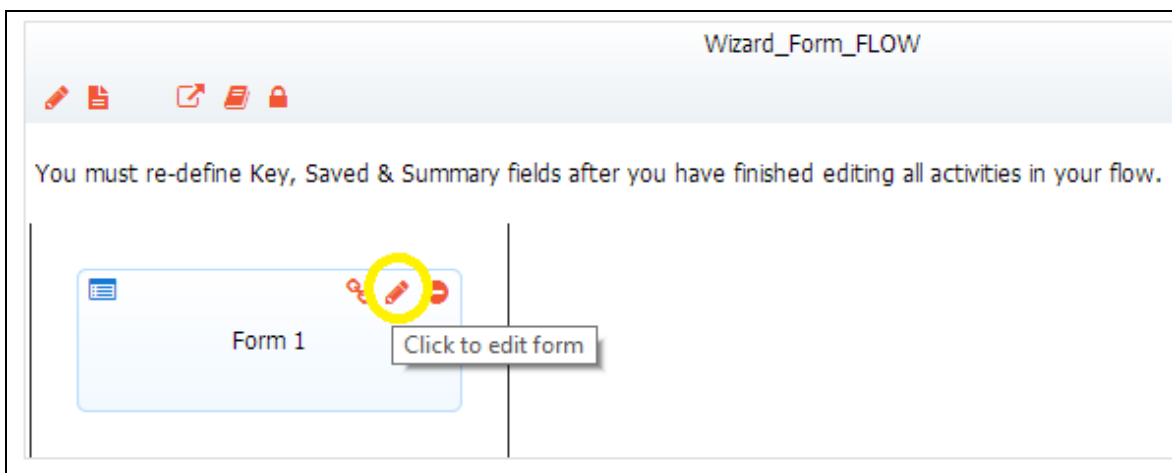
Figure 50: Edit Form Button

4. Once you save the form, the control is taken back to the **Create Web Form** screen.

5. Select the **Add as Link** checkbox, if you want the Wizard form to appear as a link in the Workspace menu.

> When you fill up a form and submit it, an XML file containing this data is generated in the process flow repository. The files uploaded in the web form also get stored there. You can access this data through the Process Flow using Context Source activity.
>
> To use these files in the process flow, follow the below steps:
>
> - Set the **Document Repository** property of the Context Source activity to **True**. **File Name (with full path)** dropdown is then visible.
>
> - There are two values in the dropdown list by default:
>   - *$$FORM_DATA$$*:
>
>   To access the XML file you need to select this option.
>
>   - *$$FORM_UPLOADED_FILE_NAME$$*:
>
>   To access the uploaded file you need to select this option.
>
> If the user uploads a single file, it gets stored in the **HW** folder inside the repository. However, in case of multiple files a zip file that contains all the uploaded files is stored in the **HW** folder with FORM_UPLOADED_FILE.zip name. To use a specific file from the zipped files, user needs to use **Custom plug-in**.

PUBLISHING A WEB FORM

By default, when a Web Form is created it remain in unpublished state. To access it, you need to publish it.

Steps to publish a Web form

1. Click the **Actions** icon of the Web Form you want to activate on the **Manage Web Forms** screen, and select the **Publish** icon (see Figure 51).
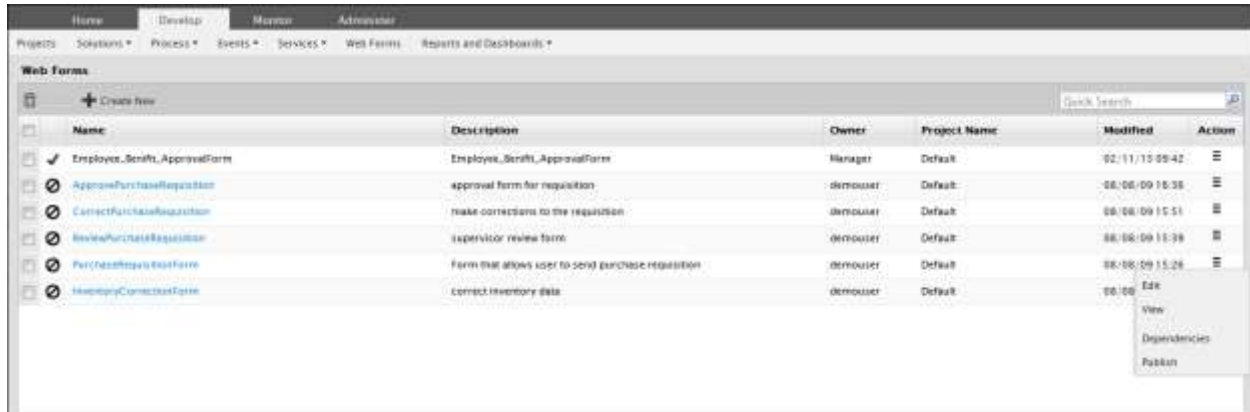
Figure 51: Activated Web Form

2. Click **OK** to the confirmation dialog box. The selected Web from gets activated and a link is added on in the **My Solution** Menu under **Monitor** tab.(see figure below)
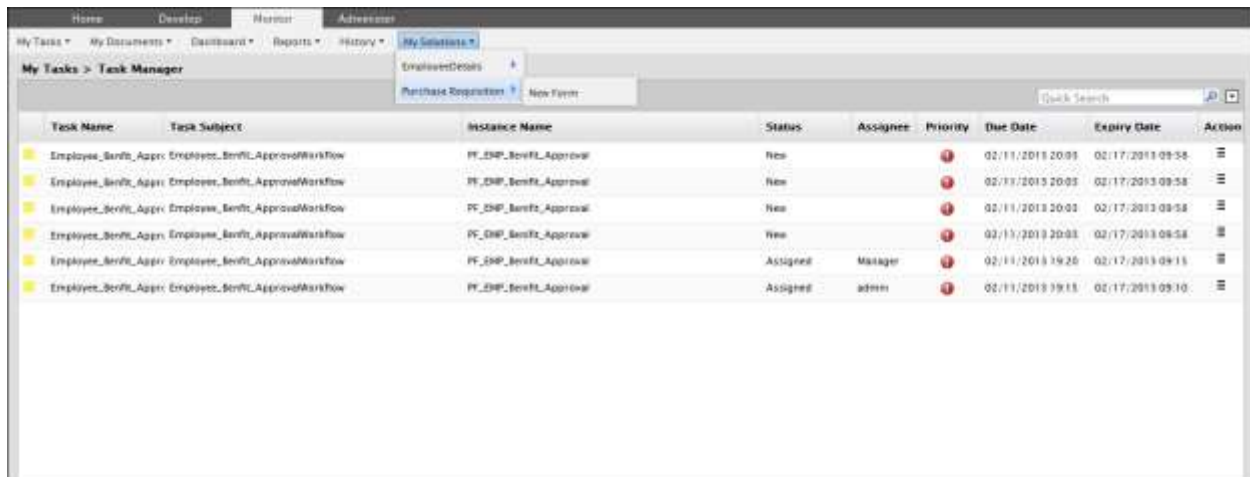
Clicking **Deactivate** will deactivate the application and remove the link from the Workspace menu.

DESIGNING HUMAN WORKFLOW TASK

A Human Workflow activity allows user(s) to interact with running process flows. It can provide data and/or get data from the process flows at runtime. Users can decide the execution path of the process flow based on the data processed.

For example, if a purchase order is issued for $75,000, it may require approval from the Manager. The user can use a WorkFlow activity in such a case. The Workflow activity allows you to design an HTML page to perform this task. This HTML page can have all details of the purchase order and a button to **Approve** or **Reject**. Further, the activity allows you to assign this task to required person such as the manager, in this case. Once the Workflow activity is created, you can use this activity in the required process flow. When the process flow is executed, this activity gets listed as a task in the Manager's Task List. The Manager can open that task and click appropriate button to accept or reject the purchase order. If the manager accepts it, then the process flow will continue, else a rejection message will be sent to the user.

The Manager can enter input by clicking the **Open Task** link on the **Task Manager** screen. This displays the HTML form, where the Manager can enter input and click **Complete Task** or **Save Task** button.

Thus, users can use the Workflow service to perform various tasks such as:

- Design HTML page to show details of the task to be executed
- Assign tasks to other users and send them emails requesting for their necessary actions. These assigned tasks get listed in the Task Manager.
- Set Due date and Expiry date of the assigned task
- Defer the task to other users in not completed with due date

> At times, the execution of tasks listed in the Task Manager, may get interrupted due to the kernel getting disconnected. To retain the executed data, the Human Workflow activity is equipped with the *Recovery Support* feature, which recovers all the executed data, at the next login.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓		

This chapter describes the following tasks:

- Creating Human Workflow Task
- Executing Human Workflow Task

CREATING HUMAN WORKFLOW TASK

Prerequisites

- Web Form to be used in the Human Workflow Task must be created.

Steps to create a Human Workflow Task

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Human Workflow Task**. This action will display you the *Manage Human Workflow Task* screen (see Figure 52).

Figure 52: Manage Human Workflow Task

3. Click the **Create New** button. The *Create Human Workflow Task* screen is displayed (see Figure 53).

Figure 53: Create Human Workflow Task

4. Enter the name and description of the Human Workflow task in the textboxes **Name** and **Description** respectively.

5. Select the user to whom you want to assign this task, from the **User(s)** list box. You can override this user with another user dynamically, at the time of process flow execution. For details on how to override assignee

during process flow execution, please refer to the [Overriding Assignee User of a Human Workflow Task](#) section.

6. To assign this task to Business Role, select the **Business Role** option from the **Role(s)** list box.

> To select more than one user or business role, press the **<Ctrl>** key and click on the user(s) or business role(s) with the mouse. To select no user or business role, select **None**. At least one user or business role should be selected.
>
> To learn about Business Role, refer to the *Creating Business Roles* section in the *Administrator Guide*.

7. Select the priority of this task from the dropdown list **Task Priority**. By default, **Immediate** is selected.

> Task priority does not have any direct impact on the task execution. It is just a flag so that user will be able to know that which task should be completed first.

8. Enter the due time for this task in days, hours and minutes, in the **Task Due for** dropdown lists.

9. Select the expiry time for this task in days, hours and minutes, from the **Task Expires after** dropdown lists.

> Time entered into **Task Due for** and **Task Expires after** fields are counted after the task is listed in the Task Manager not from the creation of the task.
>
> If a task is not completed within its due time, it will be listed in the **Over Due** list in the Task Manager of the user. If it is not completed within its expiry time, then it will be deleted from the Task Manager.

10. Select the **Defer task to colleague upon Due Date** checkbox to defer the task to a colleague, if it is not completed within its due date.

11. Select the **Defer task to manager upon Due Date** checkbox to defer the task to the Manager, if it is not completed within its due date.

> Both the **Defer task to colleague** and **Defer task to manager** checkboxes can be checked at the same time.

12. Select **Attach and View** to attach or view files from the dropdown list **Documents Attach/View**, if you want enable the option for attaching/viewing documents in the task manager.

13. Enter the name of folder, where the file attached with Human Workflow task is stored, in the **Repository Folder** field. This could be a WebDAV folder or process flow repository folder.

> - To specify, whether the defined folder is a WebDAV folder or a process flow repository folder, you need to change the *abpm.hi.repository.type* property. Refer to the *Administrator Guide* for details.
> - If you set the *repository type* property as *WebDav* and leave the *Repository Folder* field blank, the files are saved into a default group folder created in "WebDAV folder" object. If files are stored in the default folder, its path would

> be **<group name folder\Process Flow name\Transaction Id>**.
>
> Here:
>
> **group name folder** is the folder of the group, the executor belongs to. **Process Flow name** is the name of the process flow, and
>
> *Transaction ID* is execution instance Id of the process flow.
>
> - If you set the *repository type* property as *default* and leave the **Repository Folder** field blank, the files are saved into process flow repository.
> - It is important to ensure that the folder path is correct and executor has write permissions to the folder; else the process flow will be created but will fail at runtime.

14. Select the Web Form that you want to attach to the task, from the **Web Form** dropdown list. All Web Forms that are created are listed in this dropdown field.

15. Enter your email message in the **Email Body** field. If you do not specify this message, then the default email with subject is sent. The subject of the email that is sent is defined in the code. You can override this subject and the first line of the email body by dynamically changing it. For details please refer to the Overriding Email Subject section.

> To learn about Advanced Properties refer to section Changing Advanced Properties section.

16. Click **Advanced Properties** to expand Advanced Properties. This action will display you the Advanced Properties of the Human WorkFlow task (see Figure 54).

Figure 54: Advanced Properties of Human Workflow Task

17. If you want to notify the user by email when the task is listed in user's task list, select the **Send Email to User on addition of new task** checkbox.

18. If you want to send a reminder email to user, before the task's due date, select the **Send reminder email to user before due date of task** checkbox and specify the time in days, hours and minutes. For example if you specify 1 day, the reminder email is send 1 day before the due date of the task.

19. If you want to send a reminder email to user, before the task's expiry date, select the **Send reminder email to user before expiry date of task** checkbox and specify the time in days, hours and minutes.

20. Select the User(s), Colleague(s) or Manager(s) from the **Email on Due Date** list box, to send an email to a user, colleague or manager if the task is not completed by due date and time.

21. Select the User(s), Colleague(s) or Manager(s) from the **Email on Expiry Date** list box, to send an email to a user, colleague or manager if the task is expired.

> Email sent to user(s), Colleague(s) or Manager(s), on Due Date or Expiry Date, contains URL of the Adeptia Suite Login Page (e.g. http://localhost:8080/adeptia/control).
>
> To login into Adeptia Suite and to access task manager, replace 'localhost' with name or IP address of the machine, where Adeptia Suite is running.

22. Select the **Screenflow** checkbox, to open the subsequent task in the same screen, once the previous task is executed, in case of multiple tasks being assigned to you.

> If you are setting multiple tasks to be executed one after another in a process flow, and the *Screenflow* feature is enabled, then you need to attach the same type of Web Forms. For example, a process flow has 3 tasks to be executed one after another. If the first task has a Manual Web Form attached, then the remaining two tasks should also have Manual Web Forms attached. Adeptia does not support multiple Web Form types in a single process flow.

23. Select the **Screenflow in Parent** checkbox, to open the subsequent parent task in the same screen, once the previous parent task is executed, in case of multiple tasks being assigned to you.

24. Select the **Screenflow in Child** checkbox, to open the subsequent child task in the same screen, once the previous child task is executed, in case of multiple tasks being assigned to you.

25. If you want to allow the user (to whom this task is assigned), to re-assign the task to any of its colleague, then select the **Reassign Task** checkbox.

26. Select the owner of the task in the **Owner** dropdown list.

27. Set the permissions by selecting the appropriate checkbox(s) in the **Permissions** field.

28. Once you are done, click **Save** button.

EXECUTING HUMAN WORKFLOW TASK

You can view a WorkFlow task assigned to you in your Task Manager and execute it by entering inputs.

In the Adeptia Suite, the Task Manager is available in:

EBIM Suite	BPM Suite	ESB Suite	ETL Suite
✓			
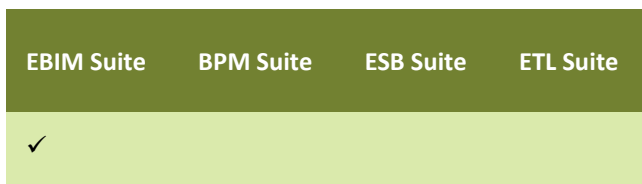
Steps to execute a task assigned to a user

1. On the Adeptia Suite homepage, click the **Monitor** tab.

2. Go to **My Tasks → Task Manager**.

The *Task Manager* screen is displayed with a list of tasks assigned to you (see Figure 55).

Figure 55: Task Manager

You can dynamically set the task description during execution of the process flow. While creating the process flow, this description is specified by using the *put-context-var* action. The *put-context-var* is connected in the process designer, before the Workflow activity. It is attached to the activity, by right-clicking the *put-context-var* action and selecting **View Properties**, and then selecting the name of the Workflow activity from the *Activity* dropdown list. The description is specified by selecting "taskDescription" from the **Key** dropdown list, and entering the required description in the *Value* field. This description is displayed in the **Description** field of the assigned task in Task Manager.

3. To add a comment, click the **Action** ≡ icon select **Comments** option. A dialog box is displayed to add the comments (see Figure 56).

Figure 56: Comments

4. Enter your comments and click **Save Comments**.

5. You can also re-assign the task to any user of your group. To re-assign the task, click the **Action** ≡ icon and select the **Reassign** link. The
Re-assign Task page is displayed (see Figure 57).
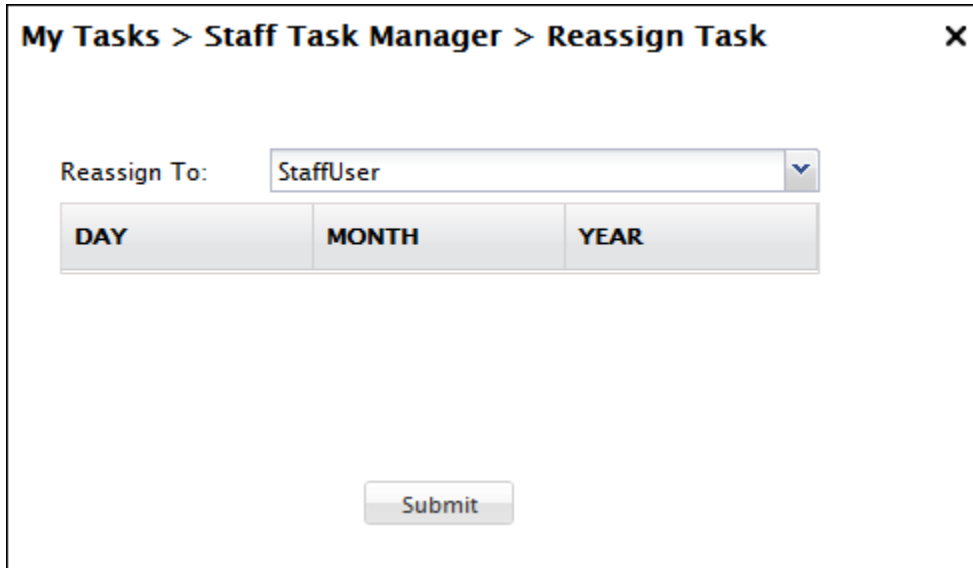
Figure 57: Re-assign Task

6. Select the user to whom you want to re-assign the task, and click arrow [>] to move it to selected user.

7. Click **Reassign**. The task is reassigned to selected user and removed from the current user.

8. Click **Open Task** link of the task you want to execute in the **Task Manager** screen. This opens the activity as displayed in the **WorkFlow Task** screen (see Figure 58).

Figure 58: Workflow Task

9. Enter details as required.

10. Click the **Attach Files** link To attach the a file. This displays the **File Upload** screen (see Figure 59).

Figure 59: File Upload

11. Click **Browse** and select the file that you want to upload.

12. Click **Upload File**. This uploads the file and displays it in the **Attach Files** list in the *Workflow Task* screen (see Figure 60).
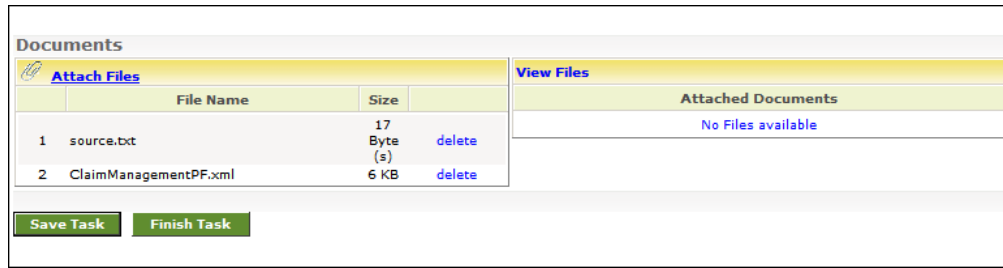
Figure 60: File Uploaded

13. Click the **Save Task** button. Reopen the task by clicking **Open Task** in the **Task Manager** screen. This displays the **Workflow Task** screen, with the attached file in the *View Files* list (see Figure 61). Click **View/Download** link to view or download the file.
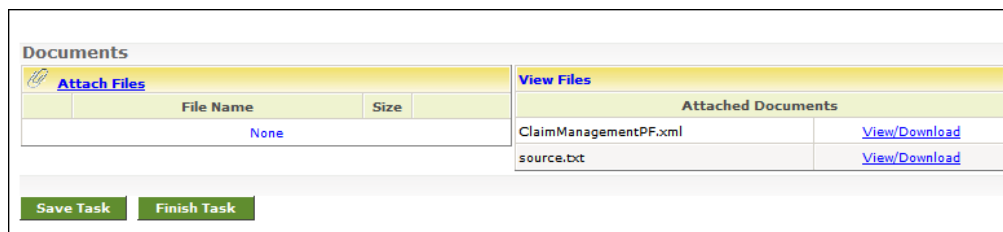
Figure 61: View Attached File

WORKING WITH PROCESS FLOW

A process flow is a set of activities arranged in a sequence to perform a specific task(s). Combining various activities i.e. Source, Target, Schema or Transformer etc. creates a process flow. The execution of a process flow is controlled by the Process Engine. The Process Engine starts the execution of process flow instances and all the activities present in a process flow. When the process flow is executed, data from the source is converted to the intermediate form and then it is dispatched to the target. The transformer does the conversion of data. In the Adeptia Server two types of transformers are used:

- **Stream2XMLStream/XMLStream2stream**: This transformer converts the source data to XML (i.e. Stream2XMLStream) and then XML to target data (i.e. XMLStream2Stream).

- **SchemaStream2Record/SchemaRecord2Stream**: This transformer converts source data to intermediate format (i.e. SchemaStream2Record) and then intermediate format to target data (i.e. SchemaRecord2Stream).

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Repository:

When the process flow is executed, data from the source is converted to the intermediate form and then it is dispatched to the target. The intermediate data is stored in a repository folder. The path of the repository folder is *.../../AdeptiaServer-6.2/ServerKernel/web/repository*. Another folder is created representing the group which executed the process flow. All files that are created during the activity, design and running of the process flow, are stored in the group folder and this group folder is stored inside the repository folder. While creating a process flow, the user can specify whether to keep or delete the repository folder.

Activities of a process flow are executed in two ways:

- **Synchronous Activity:** If an activity is synchronous, process flow initiates the execution of that activity and waits for its completion. The execution of subsequent activity is initiated only after the completion of first activity.

- **Asynchronous Activity:** If an activity is asynchronous, process flow initiates the execution of that activity and subsequent activities as defined in the process flow without waiting for the completion of the first activity.

> ℹ️ Repository file is not generated for the activities which are used in **Asynchronous** mode.

Controlling Synchronization:

In a process flow, if an activity is synchronous, no signal is required to acknowledge the Process Engine about its completion as it runs in the main thread. If an activity is asynchronous, running parallel to main thread, some mechanism is required to notify the Process Engine about its completion. This is achieved by signaling.

Signaling:

Signaling facilitates coordination of asynchronous activities in a process flow. A signal is raised as an asynchronous activity completes. The Synch Node in the process flow waits for signal and ensures that all the activities raising that signal are completed before control moves further in the process flow. This is done using the Synch Node option while defining a process flow.

Time Out:

When an activity is used as asynchronous, a new property TimeOut is added to it. By default, its value is 300 seconds. If an asynchronous activity cannot connect to the next activity within this time limit, it gets aborted. To know how to use an activity in asynchronous mode and to changes its property, refer to the section Creating Process Flow.

UNDERSTANDING PROCESS DESIGNER

Process Designer allows users to design business processes and business rules. It enables comprehensive designing of a process flow by the simple *Point and Click* method. The Business Process Modeling Notation (BPMN) standard is used to graphically depict business processes. The Process Designer is easy to use and enables both technical and non-technical users to design processes. The Process Flow Designer applet is displayed in Figure 62.
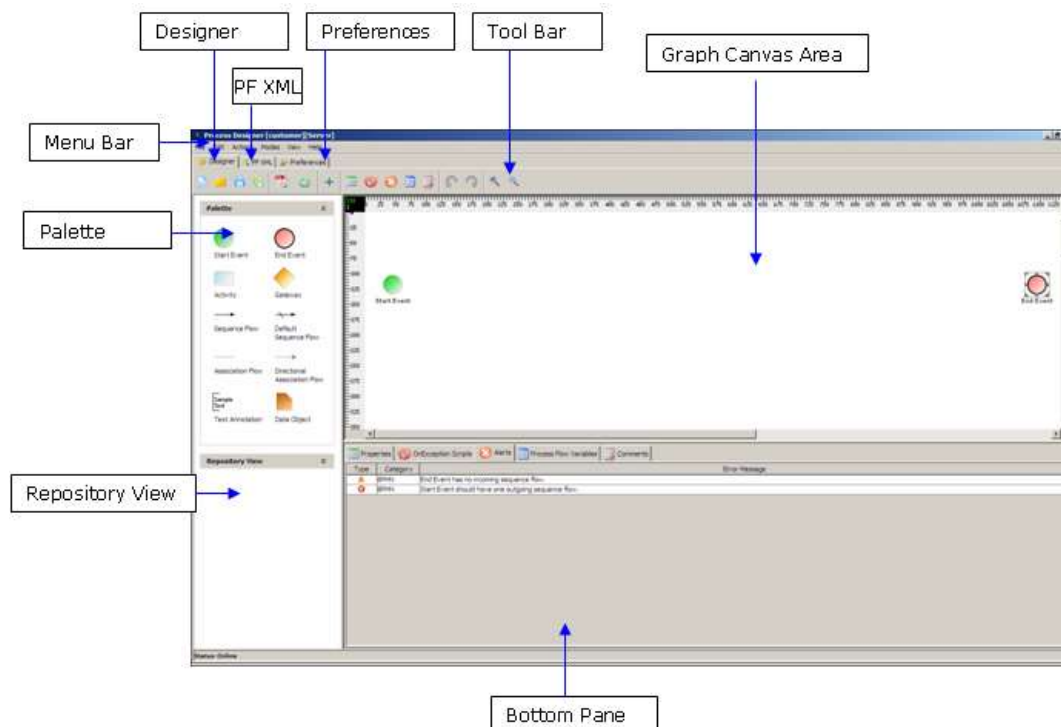
Figure 62: Process Designer Applet

The Process Flow Designer window is divided into eight sections:

- Menu Bar

- [Tool Bar](#)
- [Palette](#)
- [Repository View](#)
- [Graph Canvas](#)
- [Bottom Pane](#)
- PF XML (Process Flow XML)
- [Preferences](#)

Menu Bar

Options of the Menu Bar are listed in the table below.

Table 1: Menu Bar Options

Menu Option	Sub-Option	Function
File	New	Open new Graph Canvas to create a new process flow.
	Open locally saved Process Flow	Open a process flow saved to a local machine.
	Save to Server	Save process flow to the Adeptia Server.
	Save Process Flow locally	Save process flow to a local machine.
	Import Process Model	Import a process model and create the process flow based on that model
	Exit	Close the Process Designer applet.
Edit	Undo	Undo the previous action.
	Redo	If you later decide you didn't want to undo an action, click the Redo button
	Zoom In	Zoom and magnify the current selection.
	Zoom Out	Zoom and minimize the current selection.
Actions	Synchronize PD with Server	Synchronize the process flow with a list of Adeptia Server objects such as activities and process flow.
	Enter Login Information	Enter login information for accessing process designer.

Menu Option	Sub-Option	Function
	Maximize Graph Canvas	Maximize the Graph Canvas workspace.
	Show Properties Tab	Display and activate the Properties tab at the bottom pane of the Graph Canvas.
	Show Exception Handler Tab	Display and activate the On-Exception Scripts tab at the bottom pane of the Graph Canvas.
	Show Alerts Tab	Display and activate the Alerts tab at the bottom pane of the Graph Canvas.
	Show Process Flow Variables Tab	Display and activate the Process Flow Variables tab at the bottom pane of the Graph Canvas.
	Show Comments Tab	Display and activate the Comments tab at the bottom pane of the Graph Canvas.
	Process Flow Attributes	Allow you to enter the properties of the process flow.
Modes	Online/Offline	Toggle between online and offline mode.
	Show Flow Object Labels	Display labels of process flow objects.
	Show Connectivity Object Labels	Display labels while connecting objects.
View	Show Artifacts and Associations	Display artifacts and associations.
	Show Control Flows	Display control flows.
	Grid	Display grid in Graph Canvas.
Help	Help	Displays help for the Process Designer applet.

The sub-options of the File, Edit, Actions and Help menus can also be accessed by their keyboard shortcuts. To view a list of the defined shortcuts, refer to the Keyboard Shortcuts section.

Tool Bar

Options of the Tool bar are explained in the table below.

Table 2: Tool Bar Options
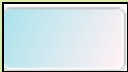
Button	Name	Function
	New Process Flow	Open new graph canvas to create a process flow
	Open Locally Saved Process Flow	Open process flow file saved on local hard disk.
	Save Process Flow to Adeptia Server	Save Process flow to the Adeptia Server.
	Save process Flow Locally	Save process flow on local hard disk.
	Generate PDF	Generate PDF file of the process flow diagram. You can generate a *Graph PDF*, S*ummary PDF* or *Entire Flow PDF*. A *Graph PDF* includes all the rules applied on all activities in the process flow. A *Summary PDF* includes only the activity details. The *Entire Flow PDF* includes all details of the process flow.
	Synchronize with Adeptia Server	Synchronize a list of Adeptia Server objects i.e. activities and process flow from the Adeptia Server.
	Maximize/Restore Flow Canvas	Maximize and restore graph canvas.
	Show Properties Panel	Show the Properties panel in the bottom pane.
	Show Exception Handler Panel	Show the Exception Handler Script in the bottom pane.
	Show Error Panel	Show the Error panel in the bottom pane.
	Show Process Flow Variable Panel	Show the Process Flow Variable Panel in the bottom pane
	Show Comments Panel	Show the Comments panel in the bottom pane.
	Undo	Undo the last action.

Button	Name	Function
	Redo	If you later decide you didn't want to undo an action, click the Redo button.
	Zoom In	Zoom In the Graph Canvas area.
	Zoom Out	Zoom Out the Graph Canvas area.

Palette

The Palette contains a list of BPMN graphical elements. BPMN graphical elements are used to define the flow of business processes. These BPMN graphical elements are listed in five different panels, listed in the table below.

Table 3: BPMN Graphical Elements

Element	Description	Notation
Events	An event is something that "happens" during the course of a business process. Events influence the flow of the process and usually have a cause (trigger) or an impact (result).	Start End Intermediate Error
Activities	An activity is work that is performed within a business process. The rectangle image displayed in the next column is used to depict an Activity in a Process Flow.	Activity
Gateways	A Gateway is used to control the divergence and convergence of a sequence flow. Thus it determines branching, forking, merging, and joining of paths.	Gateway
Flows	A flow (control flow) is used to show the order that activities are performed in a business process. There are four types of flows: • Sequence flow • Default Sequence flow • Association flow • Directional Association	Sequence Flow Default Sequence Flow Association Flow Directional Association Flow

Element	Description	Notation
Artifacts	Artifacts do not have any direct effect on the sequence flow or message flow of the process. They are used to provide additional information for the reader of the Process flow diagram. You can add any amount of information in this element. However, you cannot add any color to the text. To view the information, you can resize the frame in all directions.	Sample Text Data Object

> **i** All the BPMN Graphical Elements can be resized.

To know more details about BPMN (Business Process Modeling Notations) visit the site:

http://www.bpmn.org/Documents/BPMN_V1-0_May_3_2004.pdf

Repository View

The Repository View lists the Adeptia Server objects, such as Activities, Process flows, Context variables and Actions.

> **i** The Activities Panel has been renamed to Repository View. It is not reflected in the screenshots of this section.

Graph Canvas

The Graph Canvas is the area where a process flow is drawn. BPMN specification and Adeptia Server activities are dragged onto the Graph Canvas and arranged in a sequence in order to create a process flow. The Graph Canvas can also be resized if an activity is dragged beyond the default size.

Bottom Pane

The Bottom Pane is used to view properties of the activities, add comments to the activities, view error in a process flow and to create context variables.

There are five panels in the Bottom Pane:

- Properties
- On Exception Script
- Errors
- Process Flow Variable
- Comments

PF XML (Process Flow XML)

The Process Flow window displays Process Flow XML that is generated while designing a process flow. To view the XML of a process flow click the **PF XML** tab (see Figure 63).

Figure 63: View Process Flow XML

Preferences

The Preferences window allows you to select the background color of graph canvas and labels etc. To view the Preferences window, click the **Preferences** tab (see Figure 64).
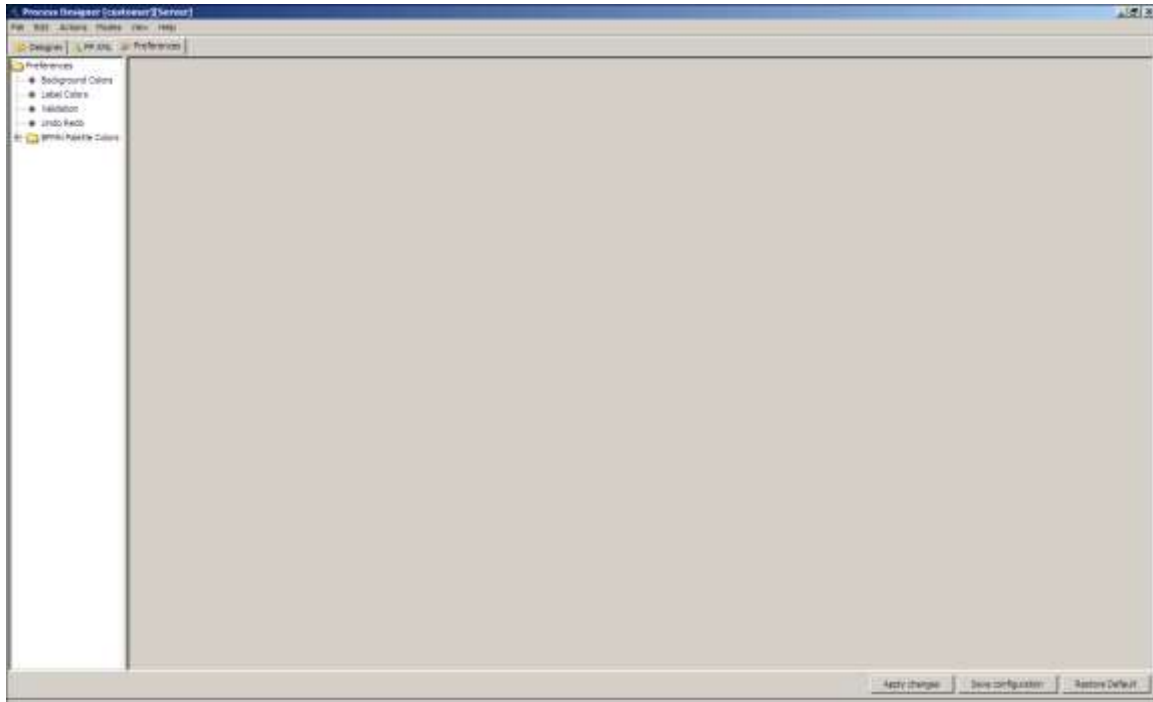
Figure 64: Preferences

You can modify various preferences. These are listed in the table below.

Table 4: Edit Preferences

Preferences	Description
Background Colors	Change the background color of the Graph Canvas, BPMN Events Panel or Activities Panel.
Label Colors	Change the colors of labels of activities displayed in the Graph Canvas.
Validation	Verifies that the process flow created in the Graph Canvas is correct as per the BPMN standard and Adeptia Server.
	You can enable/disable Validation in the Preferences window. By default, it is enabled.
Undo Redo	Reverts the action done by the user in the Graph Canvas.
	You can enable/disable Validation in the Preferences window. By default, it is disabled.
Set Undo and Redo Limit	Set the number of actions that you can undo or redo.

Preferences	Description
BPMN Palette Colors	Change colors of Events, Activities, Gateway and Artifacts.

Keyboard Shortcuts

Table 5: Keyboard Shortcuts

Menu Option	Sub-Option	Keyboard Shortcut
File	New	<Ctrl> + <N>
	Open locally saved Process Flow	<Ctrl> + <O>
	Save to Server	<Ctrl> + <S>
	Save Process Flow locally	<Ctrl> + <B>
Edit	Undo	<Ctrl> + <Z>
	Redo	<Ctrl> + <Y>
	Zoom In	<Ctrl> + <NumPad +>
	Zoom Out	<Ctrl> + <NumPad ->
Actions	Synchronize PD with Server	<F5>
	Enter Login Information	<Ctrl> + <L>
	Maximize Graph Canvas	<Ctrl> + <M>
	Show Properties Tab	<Ctrl> + <R>
	Show Exception Handler Tab	<Ctrl> + <G>
	Show Alerts Tab	<Ctrl> + <E>
	Show Process Flow Variables Tab	<Ctrl> + <F>
	Show Comments Tab	<Ctrl> + <H>

Menu Option	Sub-Option	Keyboard Shortcut
Help	Help	<F1>

CREATING PROCESS FLOW

Prerequisites

- JRE 1.6 needs to be installed on your system to open the Process Designer applet.
- The *Pop-up Blocker* needs to be disabled in the web browser, to open the Process Designer applet. By default, the *Pop-up Blocker* is enabled.
- The windows user must have Administrative rights on the PC, where Process Designer will be opened.

The Process Flow Creation using Process Designer comprises of two parts:

- Designing Process Flow using BPMN Graphical Elements
- Attaching Adeptia Server activities with the BPMN elements

Designing Process Flow using BPMN Graphical Elements

Steps to draw a Process Flow using Process Designer

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Process > Process Flow**.

   The *Manage Process Flow* screen is displayed (see Figure 65).

Figure 65: Manage Process Flow

3. Click the **Create New** button. The Create Process Flow screen is displayed.

4. Enter the name and description of the new process flow in the textboxes **Name** and **Description** fields respectively.

> Description of the process flow can be overridden during execution of the process flow. To know how to override the process flow description, refer to the section Overriding Process Flow Description at Runtime.

5. Select the logging level from the dropdown list **Logging Level**. The various logging levels are depicted in the table below.

Table 6: Types of Logging Levels

Preferences	Description
DEBUG	The DEBUG level logs are fine-grained informational events that are most useful to debug any problem. Debug level is useful for programmers.
INFO	The INFO level logs are informational messages that highlight the progress of Process flow execution. In INFO, status (successful or failure) of each activity is displayed.
ERROR	In ERROR, possible cause of failure of an activity is displayed. By default *Error* is selected in the *Logging Level.*

6. Select repository file retention from the **Repository File Retention** option (see Figure 66).

During execution, the process flow creates a temporary repository file to store intermediate data. These repository files can cause unnecessary disk space usage and you may want to delete them after execution of the process flow. On the other hand sometime these repository files can be helpful in case of the failure of the process flow execution. For each instance of the process flow execution a unique repository folder is created that contains Source, intermediate XML data files and target formatted data. By default, repository files are being stored in the repository folder of the Adeptia Server. You can also choose an option to delete them or to archive them in a different location. Options for Repository File Retention are outlined in the table below.

Table 7: Options for Repository File Retention

Retention Option	Description
DONTDELETE	Repository files are not deleted after execution of Process flow.
DELETE	Repository files are deleted after the process flow is executed.
ARCHIVE	Repository files are moved to another location. By default repository files are archived in C:/repo folder. To change the location where archived file is stored, refer to the section to any other folder or to WebDAV repository, you need to change *abpm.transaction.repository.archive.server* property. Refer to the Administrator Guide for details.
DELETE ON SUCCESS	Repository files are deleted only when the process flow is executed successfully and there is no error record.

Figure 66: Create Process Flow

7. Click **Advanced Properties**. Advanced properties of process flow are displayed (see Figure 67)

Figure 67: Process Flow's Advanced Properties

8. To make this process flow implicitly recoverable, select the **Recoverable Process Flow** checkbox.

> **i** Recoverable Process Flows are those Process flows, whose execution can be resumed in case the kernel is restarted due to some reason during Process Flow execution. For details of recoverable process flows refer to Recovery section.

9. Select the required property from the **Activities Logging Retention** dropdown list. This property specifies whether to retain the detailed log (status of each activity) of the process flow or not. By default **DONT DELETE** property is selected, which means all activity logs are always retained. When you select **DELETE ON SUCCESS** and the process flow is executed successfully, then detailed logs are deleted. Only the status of the process flow is retained.

> **i** The main objective to select **Delete On Success** is to reduce the amount of logs from the log database. This is required when you process large number of files every day in production environment. This improves the execution time of the process flow.

10. Select the priority from the dropdown list **Priority**. This property is applicable when Queue Processor is enabled. Table 8 lists the priorities and their description.

Table 8: List of Priorities and their Description

Priority	Description
NORMAL	When a process flow with *Normal* priority is executed, it first get queued to the Queue Processor and then get executed based on the availability of the queue processor.
IMMEDIATE	When a process flow with *Immediate* priority is executed, it by passes the Queue Processor and gets executed immediately, even if the queue processor is busy.

> **i** For more details about Queue Processor, refer to **Load Management** section of the **Administrator Guide**.

11. Select the project under which you want to add this Web Form. By default, it is added in the default project of Adeptia Suite. The default project of Adeptia Suite is **Default**.

12. Select the owner of the Web Form. The default owner of the Web Form is administrator.

13. Change the permission levels of the owner as per your requirements.

14. Click the **Process Flow Designer** button. The **Process Designer** window is displayed (see Figure 68).

> **i** If you are starting the Process Designer on your system for the first time, then a warning message is displayed that prevents you from starting this application. Just ignore this message and click **Start** to continue.
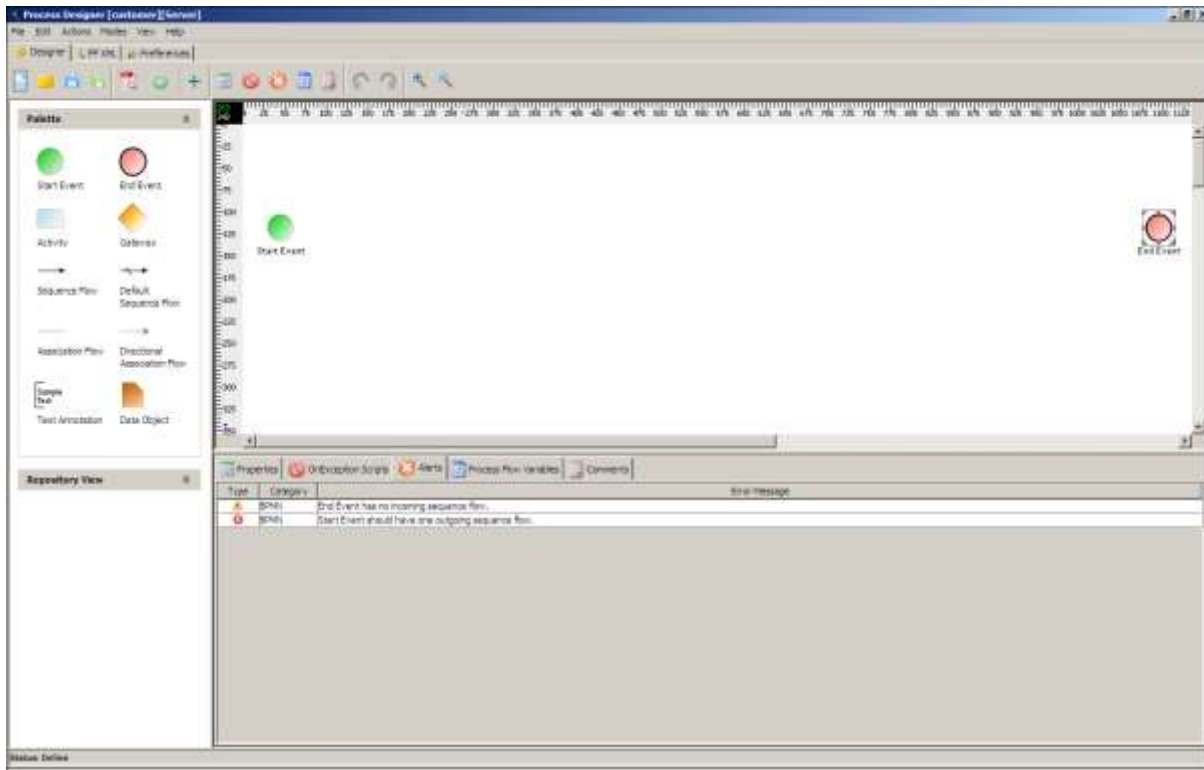
Figure 68: Process Designer

15. Click **Activity** element in the Palette and drag it to the Graph Canvas. The dragged activity element is displayed in the Graph Canvas (see Figure 69).

Figure 69: Dragging BPMN Activity into Graph Canvas

16. By default, all BPMN elements except Event objects are blank. You can add a label to the BPMN element, once you drag it to the Graph Canvas. You can do this by double-clicking the element. This displays the properties associated with the element in the Properties Panel in the Bottom Pane. Alternately, you can right-click the element and select **View Properties** option (see Figure 70).
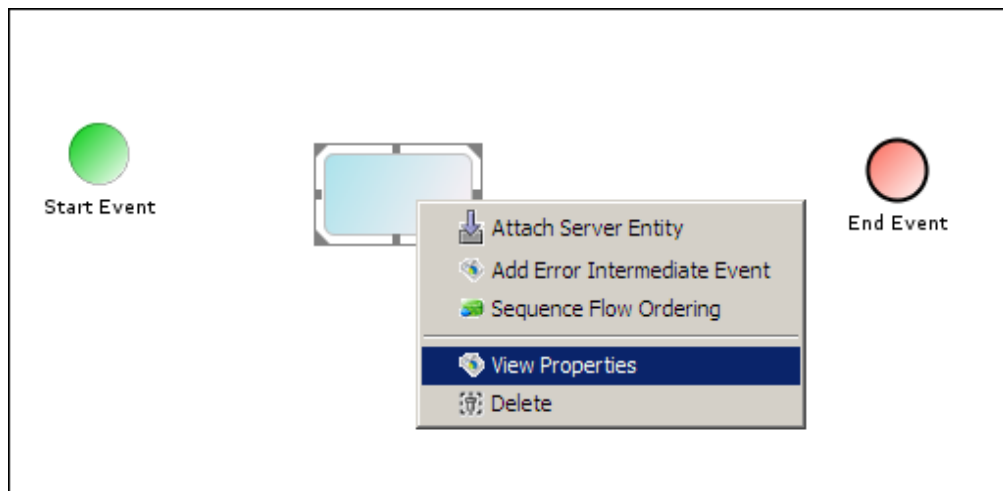
Figure 70: Right-Clicking an Activity

17. The **Properties Panel** is displayed in the Bottom Pane. Type the name of the element in the *Value* column of the *Label* field.

18. Click the element again in the Graph Canvas to display the name in the element (see Figure 71).
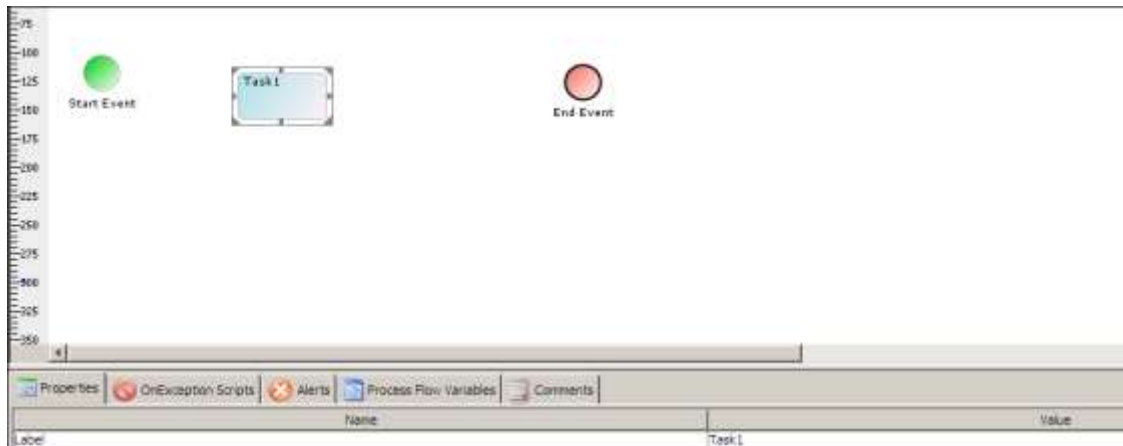
Figure 71: Displaying Name of Activity

> **i** All BPMN elements can be labeled in the same way.

19. Repeat steps 9 and 10 to add more activities in Graph Canvas.

20. Click **Gateway** element and drag it to desired location in the Graph Canvas. The **Gateway** element is displayed in the Graph Canvas area (see Figure 72).

Figure 72: Dragging BPMN Gateway into Graph Canvas

> **i** All similar elements can be dragged and dropped in the same way.

Once the required BPMN elements are dragged to the Graph Canvas and proper labeling is done using the Properties Panel, it is necessary to connect them in order to design a business flow.

1. Click required flow in the Palette. The control flow is selected.

2. Drag the cursor between two BPMN elements. Both BPMN elements are connected with the selected flows (see Figure 73).

Figure 73: Connecting BPMN Elements

3. Connect all BPMN elements with appropriate control flow (see Figure 74).
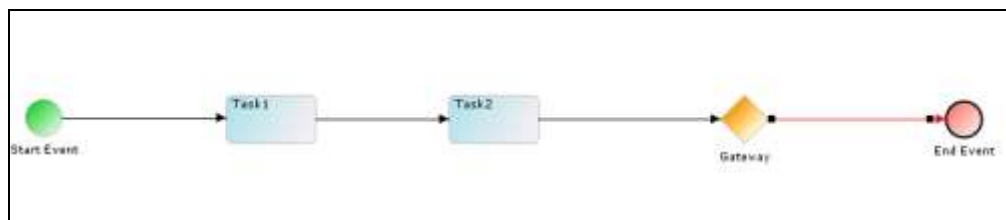
Figure 74: Connecting BPMN Elements

> You can reposition the BPMN elements by moving the arrow keys. All elements except Sequence Flow can be repositioned.

Once designing of business process is completed it is necessary to attach the Adeptia Server activities to BPMN elements of the business process.

Attaching Adeptia Server activities with the BPMN elements

Prerequisites

*   Adeptia Server activities must be created before attaching them with BPMN elements in the process flow.

Steps to attach Adeptia Server activities with BPMN elements

1. Expand the **Repository View** panel. All the items in the **Server Entities** category are displayed (see Figure 75).
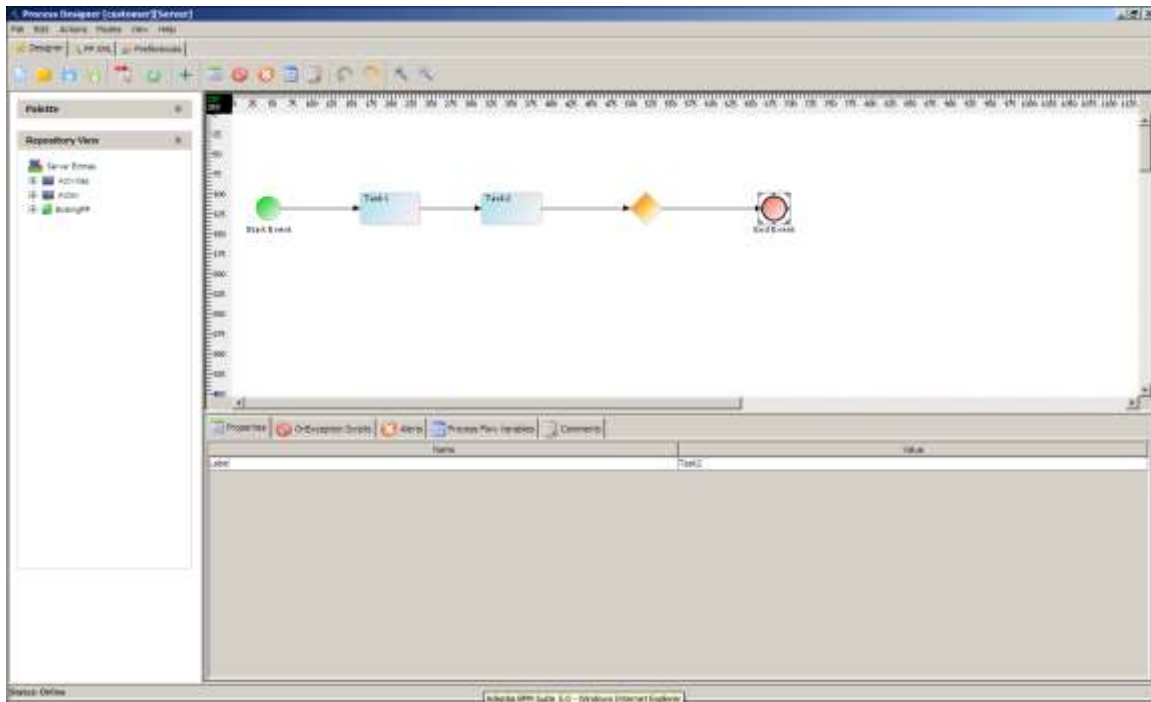
Figure 75: Selecting Adeptia Server Activity

2. Further expand the type of activities e.g. Human Workflow, Schema, Source, etc. until you find the required activity (see Figure 76).
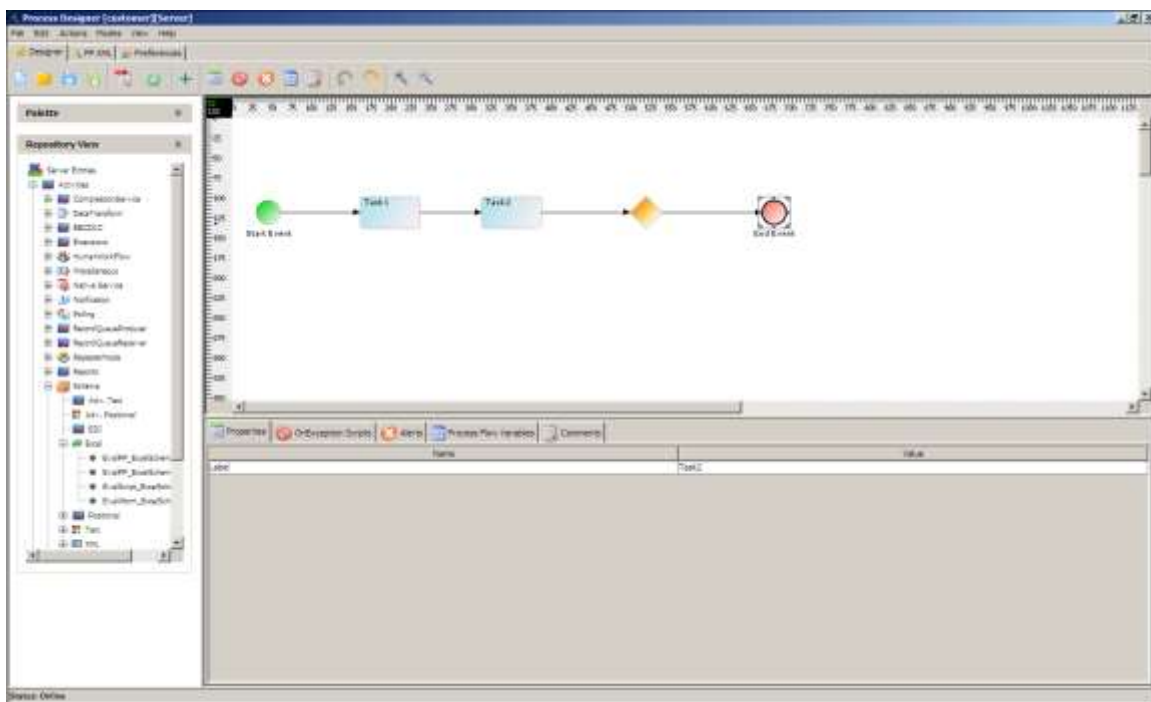
Figure 76: Selecting Adeptia Server Activity

4. Select the required activity, drag it to the Graph Canvas and drop it on the BPMN element with which you want to attach the activity. A small image of the activity is displayed at the top left corner of the BPMN element (see Figure 77).
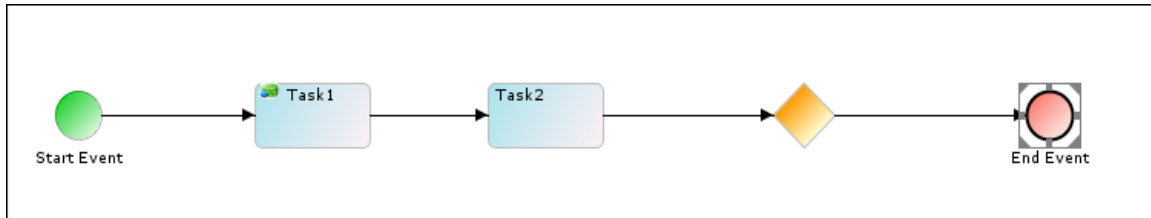
Figure 77: Attaching Adeptia Server activity

> An activity can also be attached by right-clicking the BPMN element. Right-click BPMN element and select **Attach Server Entity**. List of activities is displayed. Select the required activity and click **Ok** button.
>
> You can change the label of the element if required. If you attach an activity to a blank BPMN element, then the activity name is displayed in the BPMN element (see Figure 78).
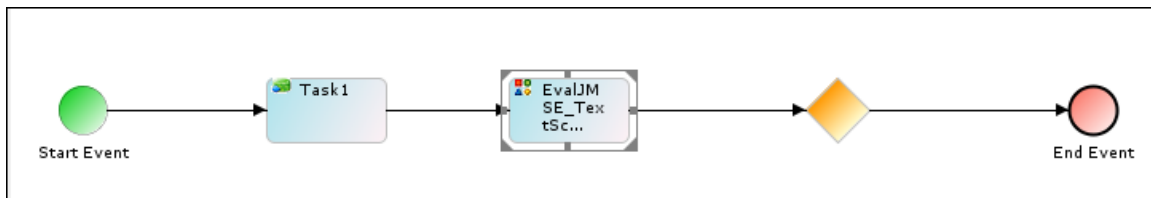
Figure 78: Adeptia Server activity name in BPMN element

5. Repeat step 1 to 3 to attach activities to other BPMN elements (see Figure 79).
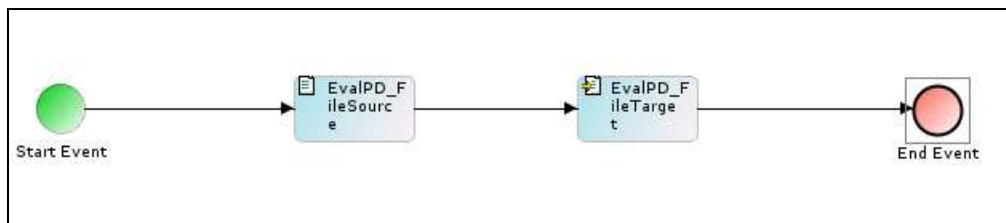
Figure 79: Attaching Adeptia Server activity

6. To view or edit the properties of the Adeptia Server activity attached with the BPMN elements, right-click activity and then select **View Properties**.

The properties of the attached activity are displayed in the **Properties Panel** (see Figure 80).
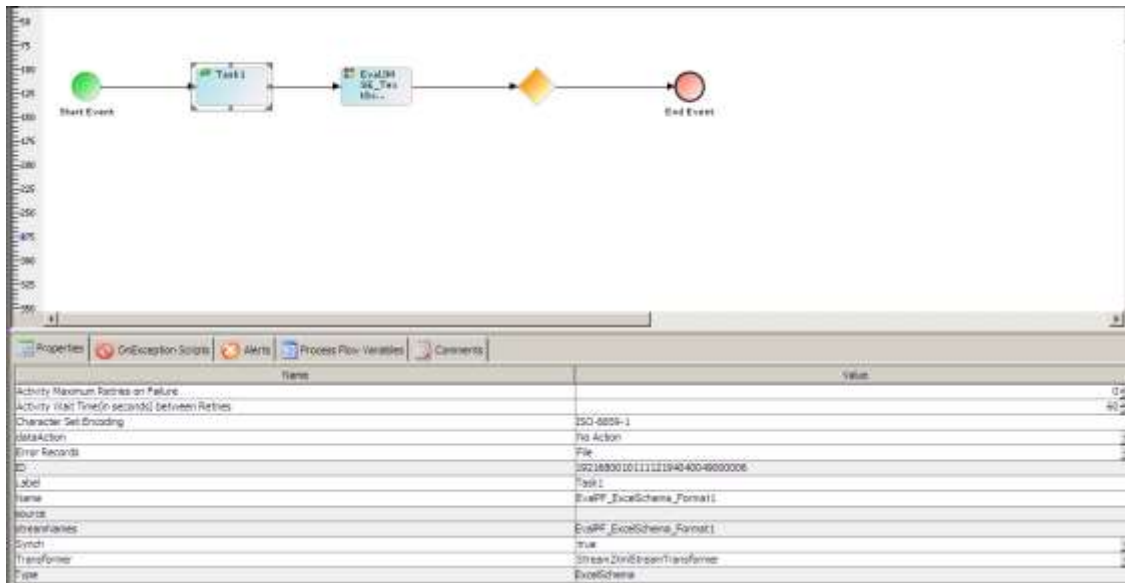
Figure 80: Edit Activity Properties

> ℹ️ If mapping is used in a process flow, following things must be checked:
>
> - Right-click source schema activity and select View Properties. *Transformer* property must be *Stream 2XMLStream*.
> - Right-click target schema activity and select View Properties. *Transformer* property must be *XMLStream2Stream*.
>
> For details on Transformer types and changing from one type to another, refer to the section **Changing Transformer Type**.

7. By default activities are *Synchronous*. If you want to make the activity *asynchronous*, go to the **Properties Panel**, change the value of *Synch* from *true* to *false*.

8. Click the **File** menu and then select the **Save to Adeptia Server**, to save the process flow on the Adeptia Server. This displays a screen confirming that the process flow has been created successfully.

Save Process Flow on Local Hard Disk

Steps to save the Process Flow on local hard disk

1. Select **Save Process Flow Locally** from the **File** menu. The **Save** window is displayed.

2. Enter the name of the file in the **File Name** field and click the **Save** button. The process flow is saved in XML format in the specified location.

> ⚠️ To create a Process flow, an IT user can simply drag the required Adeptia Server activities to the Graph Canvas and connect them using flow controls. In other words, an IT user does not need to draw process flow using BPMN elements and then attach Adeptia Server activities to the BPMN elements.

> ℹ️ You can view details of an event associated with a process flow, by clicking the event displayed under Associated Events on the Manage Process Flow screen.

> ℹ️ If a process flow is opened in **Read-Only** mode, you can view and modify it, but you cannot save the changes, as all Save options are disabled. However, if you open a process flow that has write permissions, from the Process Designer applet, then Save options become activated.

Changing Transformer Type

In the Adeptia Server two types of transformers are used:

- **Stream2XMLStream/XMLStream2stream**: This transformer converts the source data to XML (i.e. Stream2XMLStream) and then the XML to target data (i.e. XMLStream2Stream). This transformer is used when a mapping activity is used in the process flow. In this case, the Stream2XMLStream is used in the source schema and the XMLStream2stream is used in the target schema.

- **SchemaStream2Record/SchemaRecord2Stream**: This transformer converts the source data to intermediate format (i.e. SchemaStream2Record) and then the intermediate format to target data (i.e. SchemaRecord2Stream). This transformer is used when record to record process of the data is required.

Steps to change the transformer type

1. Right-click the schema activity in the Graph Canvas Area, and select **View Properties**. Properties of the selected schema activity are shown in the Properties Panel (see Figure 81).
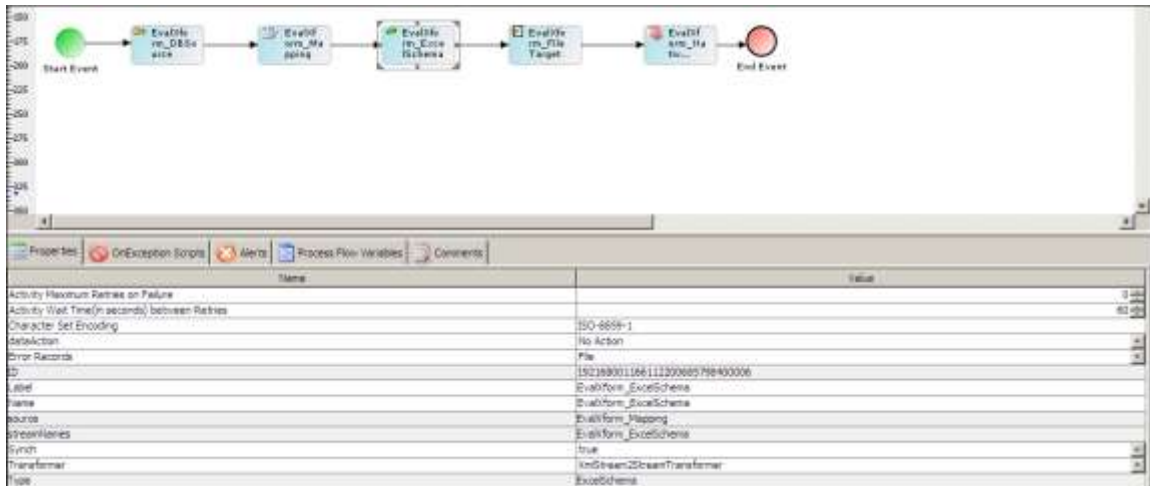
Figure 81: Changing Transformer Type

2. Select the required transformer type (e.g. *Stream2XMLStream* in case of source schema and *XMLStream2Stream* in case of target schema) from the dropdown list **Transformer**.

ACTIVATING/ DE-ACTIVATING PROCESS FLOW

Process flows can be in activated or de-activated state. You cannot execute a process flow, which is in de-activated state. If you want to execute a de-activated process flow, you have to first activate it. When a process flow is created, it is in activated state, if number of activated process flows is less than maximum allowed by license. Otherwise process flow is created in de-activated state.

Steps to activate/de-activate a process flow

1. On the Adeptia Suite homepage menu, go to **Develop > Process** and then click **Process Flow**. The *Manage Process Flow* screen is displayed (see Figure 82).

Figure 82: Manage Process Flow screen

5. Select the process that you want to activate or deactivate.

6. Select the **Activate** or **Deactivate** button as per your requirement.

7. To de-activate the process flow, click the **De-activate** button.

8. Similarly to activate a de-activated process flow, select the radio button adjacent to it and click **Activate** link.

TESTING A PROCESS FLOW

Process flow can be tested, before executing it. By testing a process flow you will be able to know the behavior of the process flow, right before executing it in production environment. Testing is useful especially for those process flows, in which decision nodes are used. When you test a process flow, you can give values of different process flow variables used in the process flow and check its behavior. The values of process flow variables are given using a XML file.

Steps to test a process flow

1. On the *Manage Process Flow screen*, select the process flow to edit it or select the option **Edit** from the **More Actions** menu under the actions column. This selects the process flow and activates the **Edit** link. Clicking the **Edit** link displays the **Edit Process Flow** screen (see Figure 83).

Figure 83: Edit Process Flow

2. Click the **Test** button. The **Test Process Flow** screen is displayed. (see Figure 84).

Figure 84: Test Process Flow

3. Click **Browse** and select the required XML files.

   Following is the sample of XML file used to test the process flow.(see Figure 85).

```
<?xml·version="1.0"?>¶
<Variables>¶
<Variable·name="Data"·value="55000"/>¶
</Variables>¤
```

Figure 85: Sample XML

4. Once the required file is selected, click **Upload XML** button. The uploaded file is show in the *Test Process Flow* screen. (see Figure 86).

This test feature is only applicable for Process Flow having variables whose values will be over-ridden by the values provided in XML file.

Process Flow Name InventoryItemsProcessing_part2

Process Flow ID 192168001002124974311548800097

File Name [   ] Browse... Upload XML

Uploaded XML Files

○ Employees1.xml

Select any uploaded XML file to "Unload" it or "Execute" Process Flow.

Figure 86: Select XML File

i You can upload more than one file.

5. Select the uploaded XML file and click the **Execute** button (the *Execute* link changes to a button when a file is selected) (see Figure 87).

This test feature is only applicable for Process Flow having variables whose values will be over-ridden by the values provided in XML file.

Process Flow Name InventoryItemsProcessing_part2

Process Flow ID 192168001002124974311548800097

File Name [   ] Browse... Upload XML

Uploaded XML Files

◉ Employees1.xml

Unload XML   Execute

Figure 87: Select XML File

The following screen is displayed (see Figure 88).

> Request submitted for InventoryItemsProcessing_part2 execution at Fri Feb 01 20:22:14 IST 2013.
> See the Process Flow Logs for execution details.

Figure 88: View Process Flow Log

6.   Click the **Process Flow Logs** link, to check the status of the process flow.

UNDERSTANDING VALIDATION

Validation is a mechanism, which ensures that the process flow created in Graph Canvas is correct as per the BPMN standard and Adeptia Server.

If the process flow is not correct, a message is displayed in the Alerts Panel of Bottom Pane (see Figure 89).
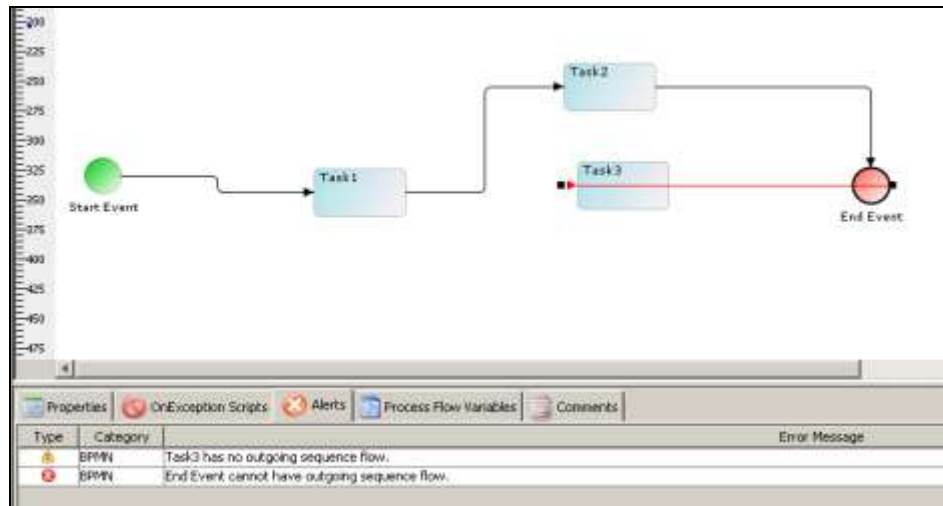
Figure 89: Validation

In Figure 89 shown above, you can see that *Task1* and *Task 2* are properly connected with the incoming and outgoing sequence flow but *Task3* has an incoming sequence but no outgoing sequence flow. The validation message is displayed in the Alerts Panel. There are two categories of validations:

- **BPMN Server specific Validation:** This includes Adeptia Server validation like File Target has no input source stream, etc. This is displayed with "BPMServer" category in the Alerts Panel.

- **BPMN Specific Validation:** This includes BPMN specific validation like end event cannot have outgoing sequence flow, etc. This is displayed with "BPMN" category in the Alerts Panel.

Validation messages are further divided into two types:

- **Error:** These are displayed in the Alerts Panel with type ( ) along with error message and the corresponding user action is reverted if possible. If revert action takes place successfully then a warning message is displayed explaining the reason of revert operation. For example, start event cannot have incoming sequence flow, hence removed.

- **Warning:** These are displayed the Errors Panel with type ( ) and the corresponding warning message is displayed. For example, start event has no outgoing sequence flow.

By default, *Validation* is enabled and *Revert Action* is disabled. Revert action specifies reverting (if possible) wrong user action automatically by Process Designer.

Disabling Validation

Steps to disable Validation

1. Click **Preferences** tab in **Process Designer** screen. The **Change Preferences** screen is displayed (see Figure 90).
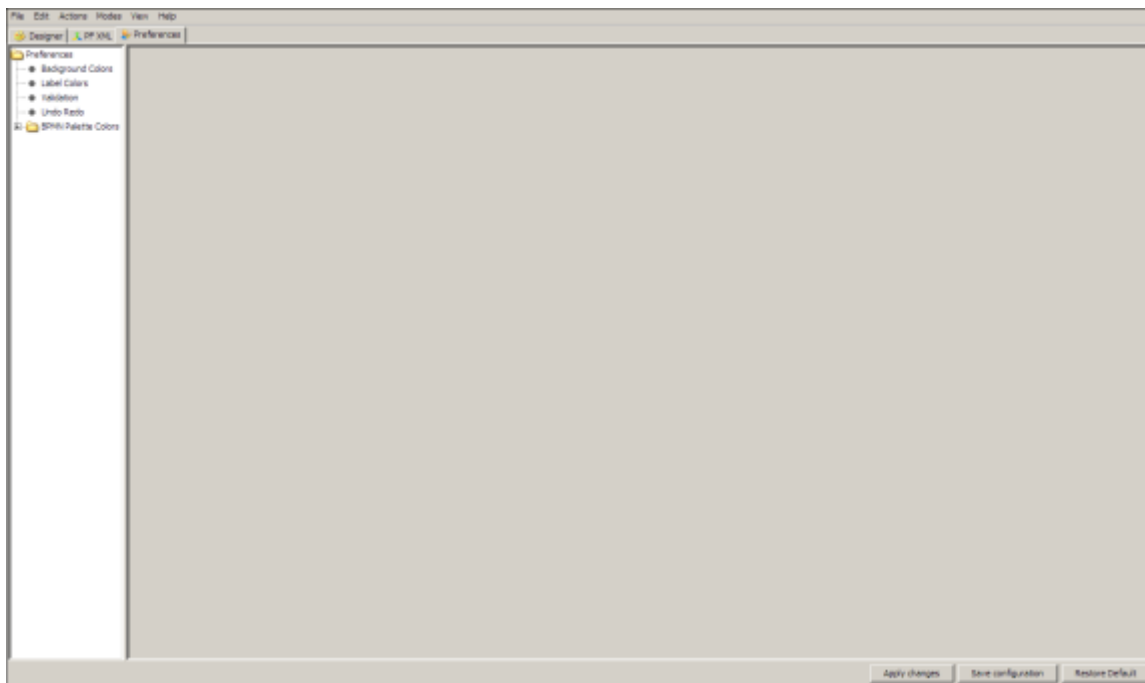
Figure 90: Changing Preferences

2. Click **Validation** under the **Preferences** menu. The **Validation Options** screen is displayed (see Figure 91).
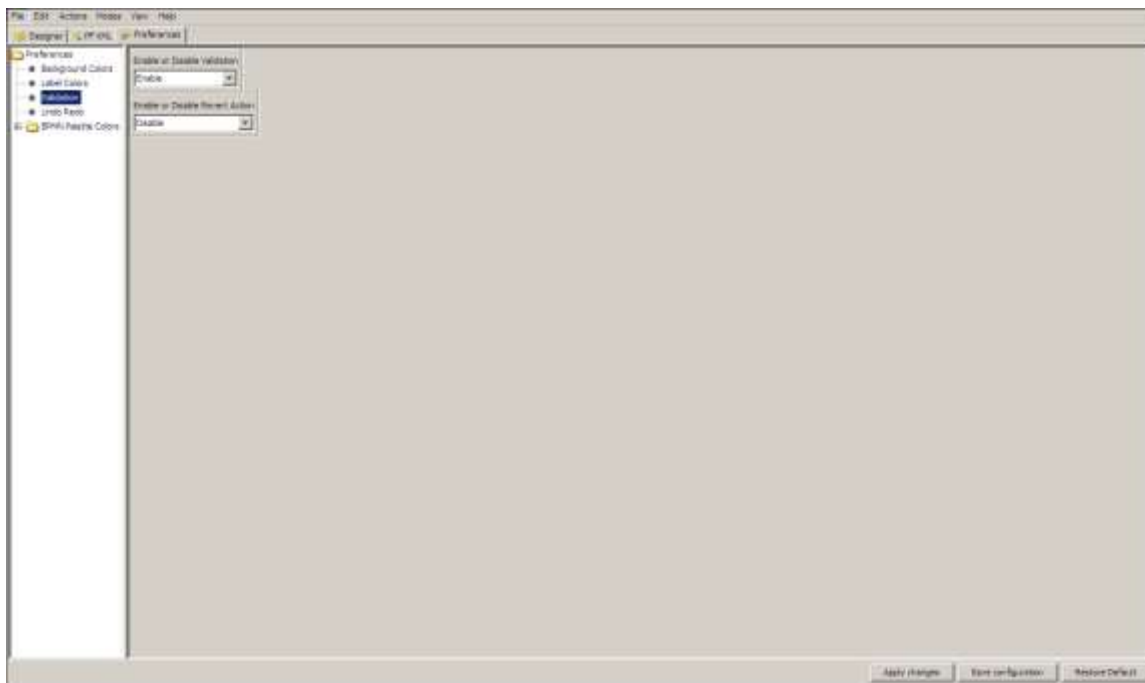
Figure 91: Disable Validation

3. Select **Disable** from the dropdown list **Enable or Disable Validation**.

4. Click **Apply Changes** button and then click the **Save Configuration** button.

> ℹ️ Similar steps need to be done to change the status of Revert Action.

USING UNDO REDO

This feature allow user to perform UNDO and REDO operations. This can be done either through the **Undo** and

Redo submenu under **Edit** menu or by clicking the **Undo** (   ) and **Redo** (   ) buttons in the toolbar.

- **Undo:** This action will replace the user current action with the previous action. For example, moving the BPMN Element to its previous position.
- **Redo:** This action will replace the user recent action with his undone action. For example, moving the BPMN Element to its previous position where undo action took place.

USING MULTIPLE SELECTIONS

User can select multiple BPMN Elements from the Flow Canvas and move them to other location in the Flow Canvas. Multiple BPMN Elements will be selected with the combined event of left mouse click and **<CTRL>** key or drawing selection rectangle on flow canvas. A selection rectangle is a virtual rectangle drawn as the user press right mouse button and drag over the flow canvas. On release of mouse button the rectangle becomes invisible and the entities inside the drawn rectangle will be selected. An example of multiple selections is displayed in Figure 92.
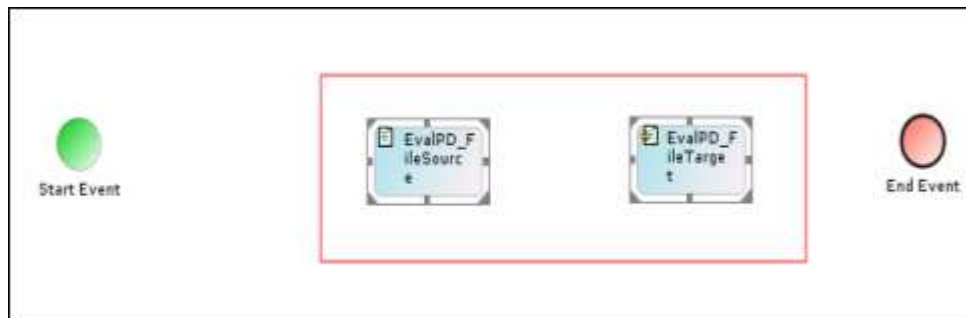
Figure 92: Multiple Selections

> ℹ️ Multiple activities can be deleted by selecting multiple activities on the canvas and selecting delete from the right clicked popup menu. Alternately, you can select the activities and press **<Delete>** on the keyboard.

USING ZOOM IN AND ZOOM OUT

This feature allow user to perform ZOOM IN and OUT operations on the canvas. This can be done either through

the **Zoom In** and **Zoom out** submenu under Edit menu or by clicking the **Zoom In** (   ) and **Zoom out** (   ) buttons in the toolbar.

In Zoom In/Zoom Out mode, all activities in the Graph Canvas will be resized. Additionally, all connecting sequence flows will be also redrawn. A process flow can be zoomed in to any limit. However when zooming out, it has to conform to certain limits. It will stop in the listed cases:

- Any element location becomes (0,0) coordinates
- Any element dimension becomes less than its minimum dimension

You can drag and move existing activities or add new activities in zoom mode, but when saving the process flow to server, they are resized and relocated to the default proportions. If any error event is attached to an activity, it will also be zoomed in the same proportion. The zoomed size is never saved to the server. When the process flow is reloaded, it will display in normal mode.

> **i** When a process flow is zoomed, the size of images inside a BPMN element will not be zoomed. Additionally, the size of an arrow head will also not change.

USING ACTIONS IN PROCESS FLOW

Actions enable necessary control over a process flow. Lists of actions that can be used to control a process flow are displayed in the table below.

Table 9: Actions for a Process Flow

Action	Description
Call	This action is used to call another process flow (sub-flow) synchronously. Users need to specify the following properties while adding the Call action to a process flow:
	flowId: Name of the process flow (sub-flow).
	You can override its value dynamically during execution of the process flow. To override the flowId you can use custom plugin activity or put-context-var before call action.
	Following is the code which is used in custom plugin activity to override the flow id:
	context.setActivityParameter("Call1","flowId", "192168001158117188341381200001");
	where *Call1* is the name of the call activity and *192168001158117188341381200001* is ID of the child process flow.
	Label: The label displayed for the call action.
	Name: Name for the call action
	resultCtxVarName: Name of the context variable that contains the status of the sub-flow. Its value is Boolean.
	Using *Call* action you can select Parent Process flow itself to be executed as child

Action	Description
	process flow. In this case the process flow will run in infinite loop. You should use some condition, which is use to stop the process flow after certain recursion. If the condition fails, you can kill the process flow from System Monitoring.
Checkpoint	This action is used to resume the execution of a process flow from its current status if kernel stops unexpectedly. The Checkpoint action saves process flow state (context variable, checkpoint info, state name etc.) in a file. When the Adeptia Server kernel is restarted it checks for the recoverable process flow by scanning all the existing process flow files and starts the particular process flow from its last checkpoint. Checkpoint should not be used within JTA block. It should be used before or after the JTA block. *Label:* The label displayed for the Checkpoint action. *Name:* Name for the Checkpoint action.
Delay	This action is used to pause the propagation of process flow for a given time. The Delay action pauses the propagation of process flow but the asynchronous activities, which were started earlier, keep running in parallel. Users need to specify the following properties while adding the Delay action to a process flow: *Label:* The label displayed for the Delay action. *Name:* Name for the Delay action. *Time:* Specify the time in seconds till which the execution of process flow is paused.
JTA-Begin/ JTA-End	These actions are used to create a JTA block. JTA block is used to create a set of activities within a process flow. When all the activities in a JTA block are completed successfully, the data is committed, and the process flow control can move beyond the JTA block to the next activity. If any of the activities in the JTA block fails to complete successfully, the rollback function is called and the whole process flow is stopped and error is logged. JTA is applicable only when source or target is a database. *Label:* The label displayed for the JTA-Begin/End action. *Name:* Name for the JTA-Begin/End action.
JTA-RollBack	This action is used to call the rollback function at any point in a process flow. The JTA–RollBack function is always used within a JTA block. *Label:* The label displayed for the JTA-Rollback action. *Name:* Name for the JTA-Rollback action.
Put-Context-	This action is used to declare one or more context variables with values

Action	Description
Var	assigned to it at any point in the process flow. A context variable is declared when this action is executed while running the process flow. Put-Context-Var is generally used to set the value of any field of an activity used in a process flow, during execution of the process flow. For example you can set/overwrite the subject of mail source activity during execution of process flow. Another example can be appending current date stamp at the end of the name of a file, created as target, during a process flow execution. User needs to specify the following properties while adding the Put-Context-Var action to a process flow: *Edit Context:* Displays a condition screen which allows you to add a new context variable or edit or delete existing context variables. *Label:* The label displayed for the Put-Context-Var action. *Name:* Name for the Put-Context-Var action. *Type:* Displays the type of action selected. This is a read-only field.
Set-Child-Context	This action is used to set the value of Process Flow Context Variable or Activity Context Variable from parent process flow to child process flow. Set-child-Context must be used before Call action. User needs to specify the following properties while adding the Set-Child-Context action to a process flow: *Activity:* Name of activity in parent process flow, whose 'Activity Context Variable' value will be used to set to the child context variable specified by Child Key. If name of the activity is not specified, then the 'Process Flow Context Variable' specified by Key will be used. *ChildActivityName:* Name of activity of child process flow whose value will be set. If name of the activity is not specified, then the 'Process Flow Context Variable' specified by Child Key will be set. *Childkey:* Name of Context Variable of the child process flow whose value will be set. *ChildName:* Name of the Call or Spawn action, which is used to call or spawn child process flow. Set-child-context uses the ChildName to find out the call or spawn action and the corresponding process flow to set the context variable. *Key:* Name of the context variable of the parent process flow whose value will be used to set the child context variable specified by Child Key. *Label:* The label displayed for the Set-Child-Context action. *Name:* Name for the Set-Child-Context action.
Set-Parent-Context	This action is used to set the value of 'Process Flow Context Variable' or 'Activity Context Variable' from child process flow to the 'Process Flow Context Variable' or 'Activity Context Variable' of the parent process flow, which initiated the child process flow by call/spawn action. User needs to specify the following properties while adding the Set-Parent-Context action to a process flow:

Action	Description
	Activity: Name of activity of the child process flow, whose 'Activity Context Variable' value specified by Key will be used to set the parent process flow variable specified by Parent key. If name of the activity is not specified, then the 'Process Flow Context Variable' specified by Key will be used.
	Key: Name of the context variable of the child process flow whose value will be used to set the parent context variable specified by Parent Key.
	Label: The label displayed for the Set-Parent-Context action.
	Name: Name of Set-Parent-Context action
	ParentActivityName: Name of activity of parent process flow whose 'Activity Context Variable' specified by Parent Key will be set. If name of the activity is not specified, then the 'Process Flow Context Variable' specified by Parent Key will be set.
	ParentKey: Name of Context Variable of parent process flow whose value will be set.
Spawn	This action is used to call another process flow (sub-flow) asynchronously. Users need to specify the following properties while adding the Spawn action to a process flow:
	flowId: Name of the process flow (sub-flow).
	You can override its value dynamically during execution of the process flow. To override the flowId you can use custom plugin activity or put-context-var before spawn action.
	Following is the code which is used in custom plugin activity to override the flow id:
	context.setActivityParameter("Spawn1","flowId", "1921680011581171883413 81200001");
	where *Spawn1* is the name of the spawn activity and *1921680011581171883413 81200001* is ID of the child process flow.
	Label: The label displayed for the Spawn action.
	Name: Name for the Spawn action.
	resultCtxVarName: Name of the context variable that contains the status of the sub-flow. Its value is Boolean.
	Signal: Name for the signal that is generated after the asynchronous process flow (sub-flow) is completed. This property is applicable only when Wait for Child property is set to true.

Action	Description
	Wait for Child: Specify whether the parent process flow's end event will wait for the completion of child process flow or not. If this property is set to true, the parent process flow end event will wait till the child process flow is completed. During this period, parent process flow will be in running state. Once the child process flow is completed, it raises the signal specified in the Signal property and then the end event is executed. If the value of Wait for Child property is set to false, the parent process flow does not wait for the child process flow to be completed.
Synch	This action is used to raise a signal to process engine when an asynchronous activity is completed. The following properties need to be specified while adding the Synch action in a process flow: *Label:* The label displayed for the Synch action. *Name:* Name for the Synch action. *Signal:* Name of the signal that is specified in the signal properties of the Synch action.
Trace	This action is used to log a message, which can be used later for information, debugging, or error log purposes. User can check the values of variable at run time in a process flow. This action uses Adeptia Server logging framework. Users need to specify the following properties while adding the Trace action to a process flow: *Label:* The label displayed for the Trace action. *Log Level:* Log Level is the level at which the message is to be logged. It can be logged at DEBUG, INFO or ERROR levels. Logging level for trace action should not be higher than the logging level of the Process Flow. For example if you have selected 'INFO' logging level in the process flow, you should select 'INFO' or 'ERROR' in trace action. If you select 'DEBUG' logging level in trace action, the trace message will not be logged in process flow log. Similarly while viewing the process flow log, if you select logging level, lower than the logging level of trace action, you cannot see this trace message in process flow logs. For detailed information about Logging Levels, refer to the *Logging* section in the *Administrator Guide*. *Message:* Message that is logged when the trace action is executed. To print the value of a variable in logs, enter $$variablename$$ in the message field. Name: Name for the Trace action.
Wait	This action waits for certain variable value to be changed in a process flow 'context' to a predefined value for a given timeout. Basically process engine waits for some event to happen then it moves forward. This action is related to

Action	Description
	polling of a variable and setting some variable in context. If user is polling for any context variable value then **var**, **value**, and **resultCtxVarName** fields are mandatory in Wait action. Users need to specify the following properties while adding the Wait action to a process flow: *Label:* The label displayed for the Wait action. *Name:* Name for the Wait action. pollinginterval: Time interval in seconds the wait action will poll for the above specified variable value. *resultCtxVarName*: Name of the context variable that contains the status of the Wait action. Its value is Boolean timeout: Timeout duration in seconds *value:* Value of the context variable. *var:* Name of the context variable for which the Wait action 'waits'.

Steps to add Actions to a Process Flow

1. Click hierarchy structure in the **Repository View** panel. Expand the **Action** list of the Adeptia Server. The list of Adeptia Server actions is displayed (see Figure 93).
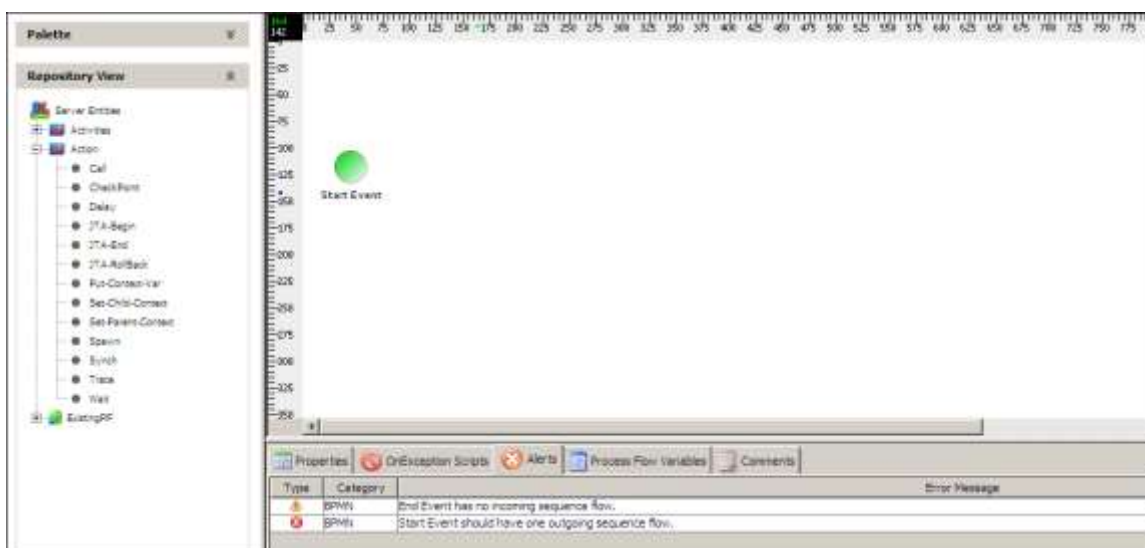
Figure 93: List of Actions in Adeptia Server

2. Select the required action and drag it to the Graph Canvas area. The dragged action is displayed in the Graph Canvas (see Figure 94).
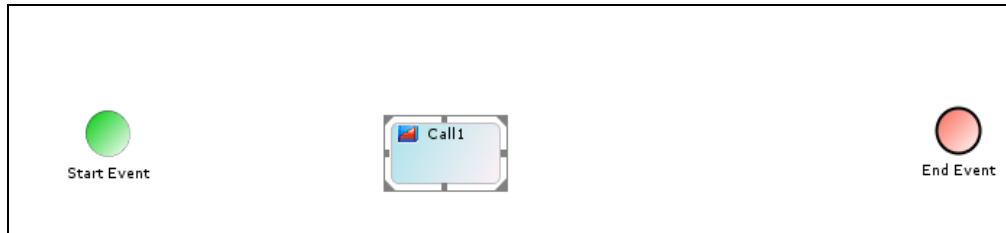
Figure 94: Dragging Action to Graph Canvas

3. Right-click **Action** element and select **View Properties**. The properties of the action element are displayed in the Properties Panel in the Bottom Pane (see Figure 95).
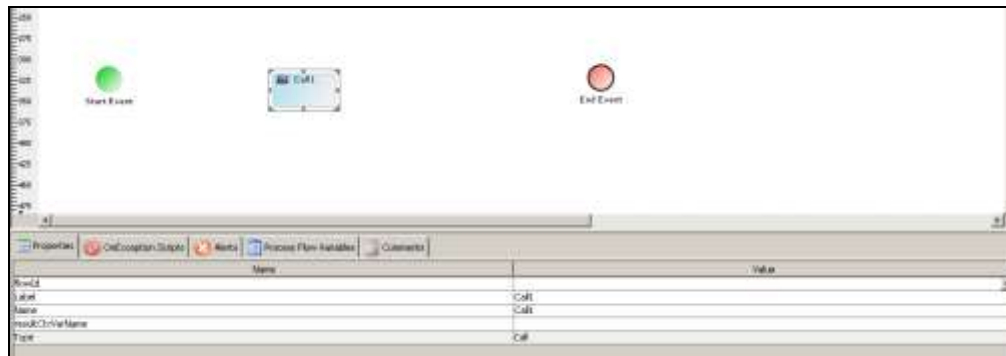
Figure 95: Action's Properties

4. Change the required properties and then click the action element in the Graph canvas area.

CREATING PROCESS FLOW VARIABLE

Process Flow Variable are created and used throughout the execution of a process flow.

Steps to create a Process Flow Variable

1. Click the **Process Flow Variable** tab in the bottom pane.

   The **Process Flow Variables Panel** is displayed with the list of existing variables (see Figure 96).
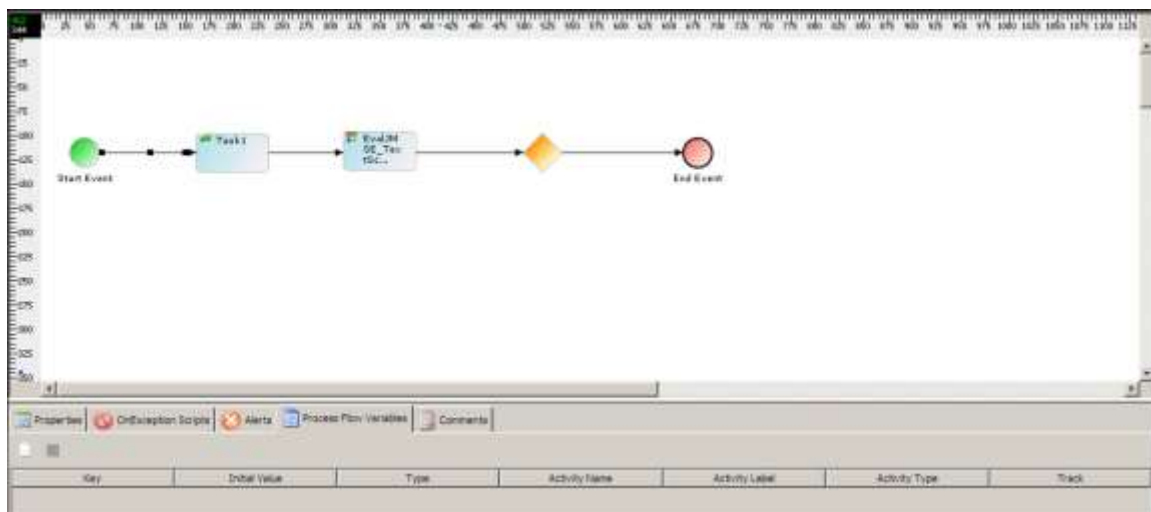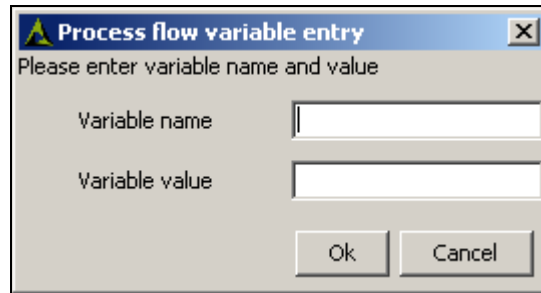
Figure 96: Process Flow Variable Panel

2. Click the **New Process Flow Variable** ( ) button in the Process Flow Variables Panel. The **Process Flow Variable Entry** screen is displayed (see Figure 97).

Figure 97: Create Process Flow Variable

3. Enter the name for the process flow variable in the textbox **Variable Name**.

4. Enter the value of process flow variable in the textbox **Variable Value**.

5. Click **OK** button to save the process flow variable and return to the Graph Canvas.

6. Once a new process flow variable is created, it is added to the list in the Process **Flow Variables** tab (see Figure 98).
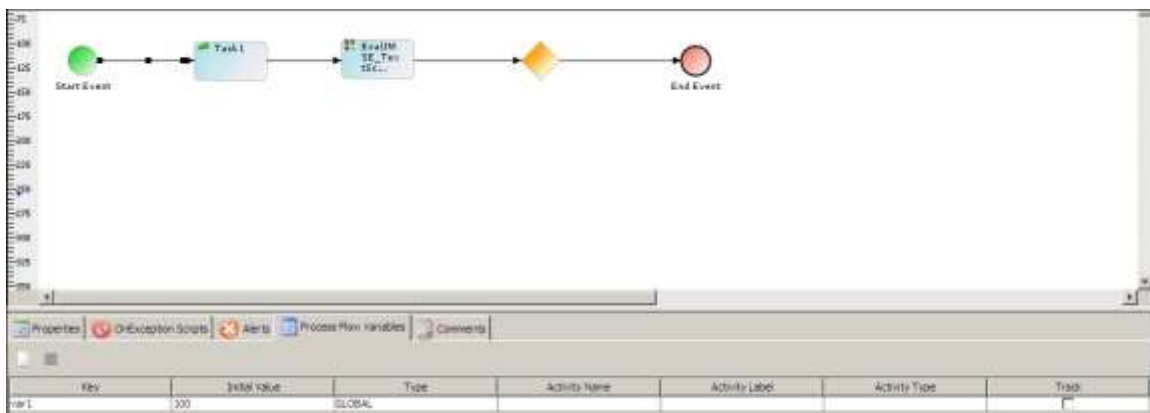
Figure 98: Process Flow Variable created

> To track all changes made on the process flow variable, check the *Track* checkbox against the process flow variable.

CREATING CONTEXT VARIABLE

You can create multiple context variables in a process flow using the *PutContextVar* action. Once they are created, you can use these context variables in the context of the process context as and when required.

Steps to create a Context Variable

1. Click hierarchy structure in the **Repository View** panel. Expand the **Action** list and select the **Put-Context-Var** action. Drag it to the Graph Canvas area. The Put-Context-Var action is displayed in the Graph Canvas (see Figure 99).

Figure 99: Drag Put-Context-Var action in Graph Canvas

2. Right-click **Put-Context-Var** action and select **View Properties**. The properties of the *Put-Context-Var* action are displayed in the Properties Panel in the Bottom Pane (see Figure 99).
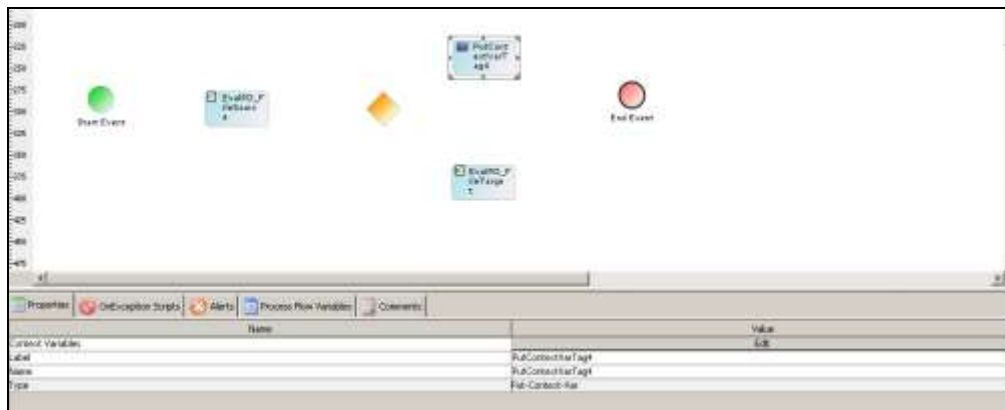

Figure 100: Properties of Put-Context-Var action

3. Click the **Edit** button. The **Edit Context Variables** screen is displayed (see Figure 101).

    This screen displays a list of existing context variables and the Add Variable (   ), Edit Variable (   ) and Delete Variable (   ) buttons.
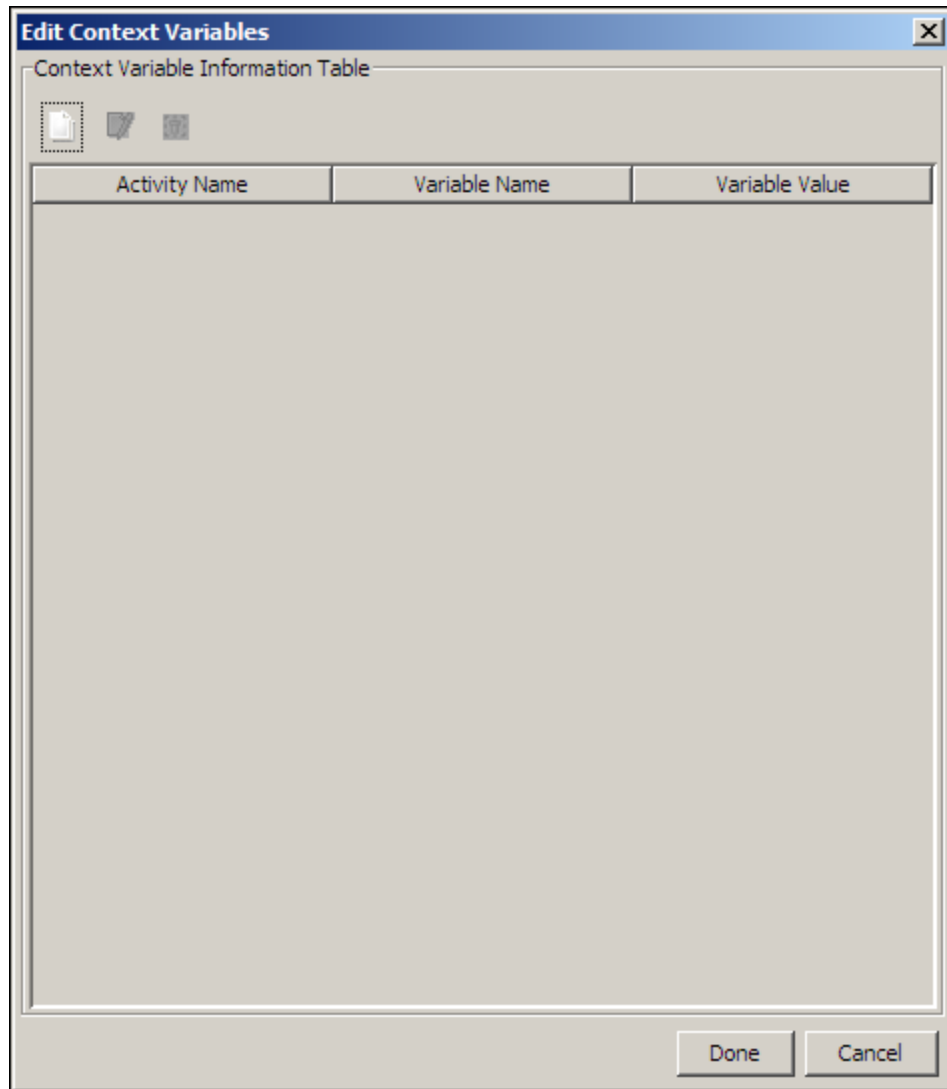
Figure 101: Edit Context Variables

> The **Edit Variable** and **Delete Variable** buttons appear as disabled if no context variables have been created or no existing context variables have been selected.

4. Click **Add Variable** ( ) button to create a new context variable.

The *Context Variable Information* screen is displayed (see Figure 102).

Figure 102: Context Variable Information

5. Select the name of the activity for which you want create the context variable, from the dropdown list **Activity Name**. This dropdown lists all the activities that are currently present on the Graph Canvas. Once you select the activity, all the attributes of the selected activity, are listed in the **Variable Name** dropdown list.

> **i** If the **Activity Name** field is left blank, then a new context variable is declared.

6. Select the attribute for which you want to create the context variable, from the dropdown list **Variable Name**. For example, you can select the File Path field in case of a File Source or File Target activity.

> **i** If the **Activity Name** field is blank, then the current context variables will be listed in the **Variable Name** dropdown list.

7. Enter the value that you want to set for the attribute/context variable, in the *Variable Value* field.

> **i** You can even append the current date or time stamp with the name of the file in the *Variable Value* field. To do this, click in the *Variable Value* field, and press **<CTRL>** + **<Space Bar>.** A list of the date and time format is displayed. Selecting a format from this list, displays it in the *Variable Value* field. Alternately, you can enter the required file path with the file name as in the example:
>
> `C:\target\File_target%%yyyy-MM-dd%%.txt`
>
> The Variable Value field does not support '&' and '<' symbols.

8. Click **Done**.

This adds the context variable and takes the control back to the *Edit Context Variables* screen, where the new context variable is added to the list of existing context variables (see Figure 103).
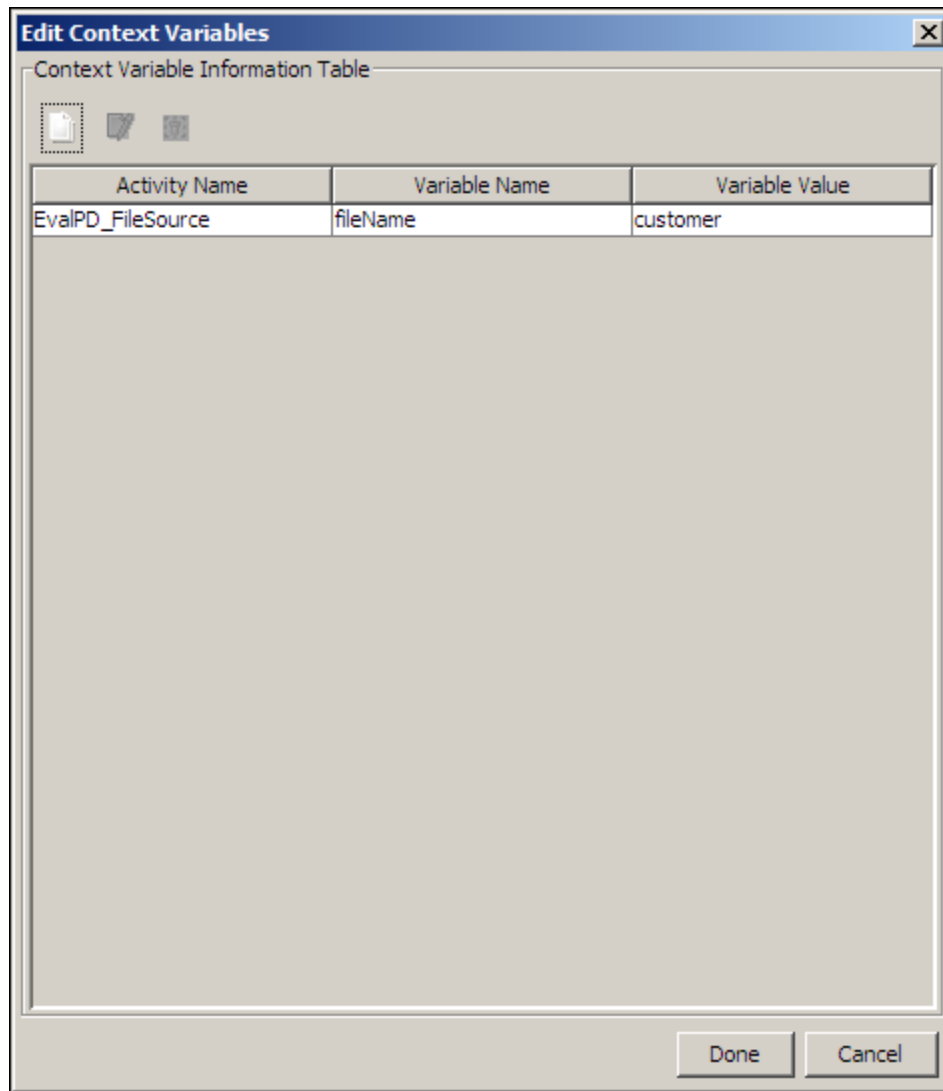
Figure 103: Context Variable Added

> You can add multiple context variables (up to a maximum of 100) for the process flow.

9. Click **Done** on the *Edit Context Variables* screen to add all the displayed context variables to the context of the process flow.

> Similarly, you can edit a context variable, by selecting it from the list of existing context variables on the *Edit Context Variables* screen. This selection will enable the **Edit Variable** button. Clicking this button will display the *Context Variable Information* screen with the selected context variable details in edit mode. You can make the necessary changes and click **Done** to save the modified context variable.

You can delete a context variable, by selecting it from the list of existing context variables on the Edit Context Variables screen. You can select multiple context variables to delete, by pressing **<CTRL>** and the context variables. This selection(s) will enable the **Delete Variable** button. Clicking this button will delete the selected context variable(s).

USING CONTEXT SOURCE AND CONTEXT TARGET

Process Flow keeps it data in memory called Process Flow Context, which is used by the process flow during its execution. When process flow takes any data from the context, it uses the context source activity. Context Source is used to read a variable and stream it out to other activities of the process flow. In addition to that Context Source can also read file from repository (WebDAV or File) and pass it to other activities. Similarly, when process flow sends any data to the context, it uses the context target activity.

Steps to create a Context Source/Target activity

1. Click hierarchy structure in the **Repository View** panel. Expand the **Activities** list and click **Source**. A list of source activities is displayed.

2. Select **Context Source**. Drag the Context Source to the Graph Canvas Area. A small image of the activity is displayed in the Graph Canvas Area (see Figure 104).

Figure 104: Drag Context Source

3. In the Graph Canvas area, right click the **Context Source** and select **View Properties**. This displays all properties for the context source in the Bottom Pane (see Figure 105).

Figure 105: Properties of Context Source

A list of properties and their descriptions are displayed in the table below.

Table 10: Context Source/Target Activity Properties

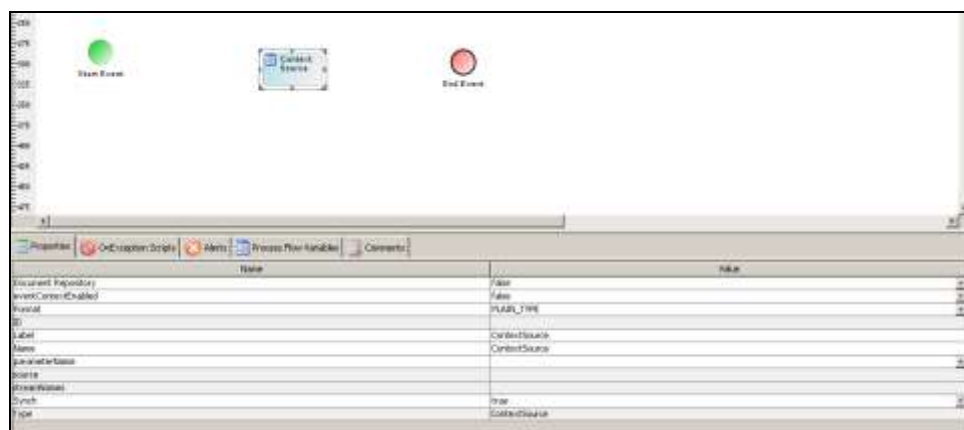| Properties	Description
Document Repository	This property specifies whether the data to be taken from the value of process flow variable, or from the document repository. If it is set to false, the data is taken from the Process Flow variable, specified by the Parameter Name property. If it is set to true, the source data is taken from the repository file specified by the File Name (with full Path) Property. Specify the path of the document repository and the name of the repository file, from which the data is to be taken, in this field. Repository can be WebDAV repository or file repository. To know more about repository, refer to the *Administrator Guide*.
eventContextEnabled	By default it is set to **NO**. If you want to pass any data from event, select **Yes**. For example, if you are triggering the process flow using Mail Event and you want to pass the content of the mail to the process flow, set this property to yes. To know about events, refer to the **Creating Trigger and Events** section.
Format	Data Format; whether Plain Type or Record Type. Select Plain Type, if data is in Byte Stream. Select Record type, if data is in record format.
Label	Label of the Context Source Activity displayed in the Graph Canvas area.
Name	Name of the Context Source activity. By default, it is same as the Process Variable name.
Repository Folder	Name and path of the WebDAV folder. This property is displayed only if the **Document Repository** property is set to *True*.
ParameterName	Select the name of the Process Flow Variable, whose value is to be taken as context source. This property is applicable only when the **Document Repository** Property is set to *False*.
Source	Name of the stream being consumed by this activity. This property is applicable only for Context Target. It is non-editable.
streamNames	Name of the output stream name. This property is applicable only for Context Source. It is non-editable.
Sync	Specifies whether the activity will be executed in Sync mode or A-sync mode.
Type	Activity Type; whether Context Source or Context Target. By Default Context Source is selected. If you want to use it as Context Target, select Context Target from the dropdown list.

Properties	Description
Version Control	It specifies whether versions are to be maintained for the repository file, which is created by context target. This property is displayed only if the **Document Repository** property is set to *True*. If this property is set to false, then the versions are not maintained. If it is set to True, then all versions are tracked.

OVERRIDING PROCESS FLOW DESCRIPTION AT RUNTIME

You can override the description of process flow during execution. To override the description put-context-var action is used. If the description of a process flow is overridden, in process flow log, new description is shown.

Steps to override Process Flow Description

1. Click hierarchy structure in the **Repository View** panel. Expand the **Action** list and select the **put-context-var** action and drag it to the Graph Canvas area anywhere within the process flow.

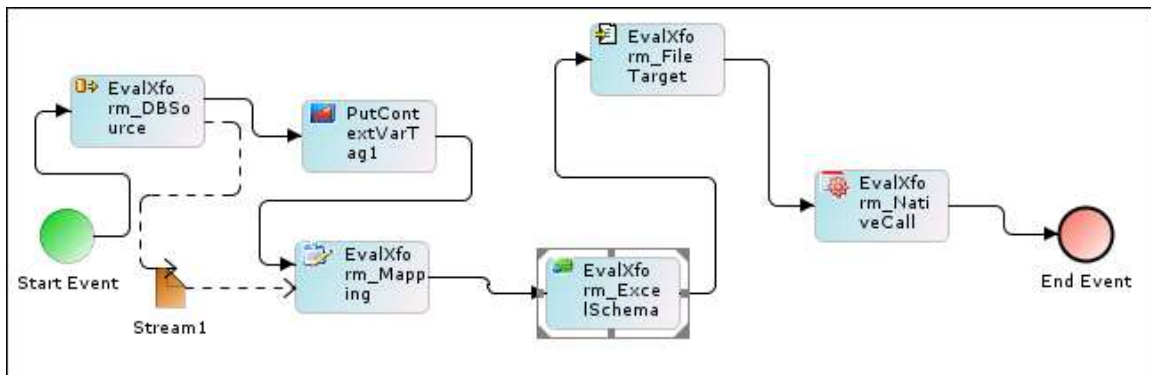2. Connect the put-context-var action as shown in Figure 106 .

Figure 106: Connect Put-Context-Var to activity

3. Right-click **put-context-var** and select **View Properties**.

Its properties are displayed in the **Properties Panel** in the Bottom Pane (see Figure 107).
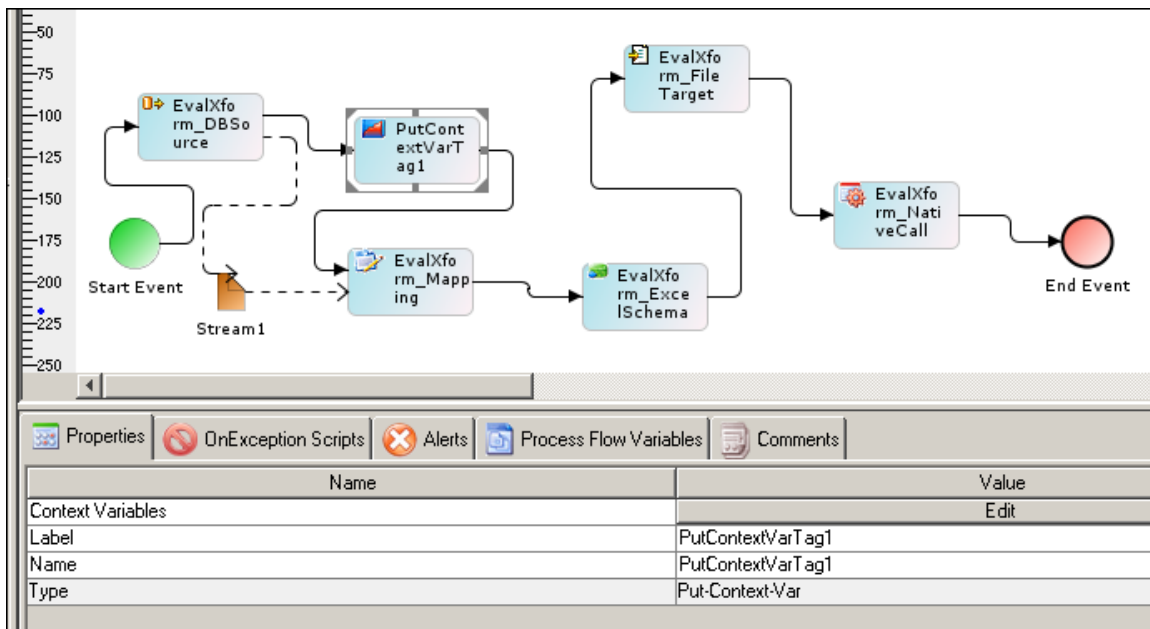
Figure 107: Properties of Put-Context-Var

5. Click the Edit button to edit the value of context variable. The *Edit Context Variables* dialog box is displayed.

6. Click Add Variable ( ) to add new context variable. The *Context Variable Information* screen is displayed. Leave the Activity Name field blank.

7. Select ProcessFlowDescription from the dropdown list **Variable Name**.

8. Enter the new description of the process flow in the textbox **Variable Value**.

9. Click **Done** to close the Context Variable Information screen. This takes the control back to the *Edit Context Variables* screen. The newly created variable is added to the list of existing context variables.

10. Click **Done** to close *Edit Context Variables* screen and return to Process Designer.

11. **Save** the process flow and exit from Process Designer.

OVERRIDING ACTIVITY OF A PROCESS FLOW AT RUNTIME

An activity of a process flow can be overridden by another activity during execution of the process flow. For example let's assume the following process flow:
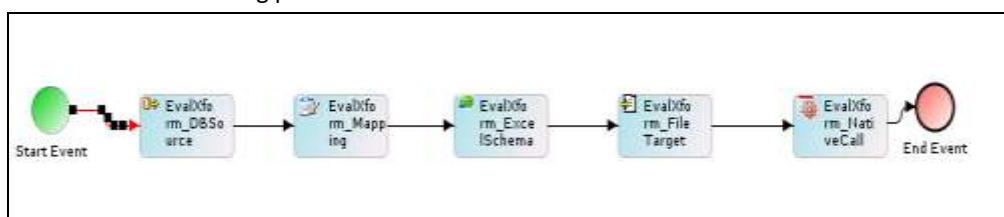
Figure 108: Usage Scenario

In Figure 108 the process flow uses the EvalXform_ExcelSchema. You can override this activity with any other schema activity (for example, EvalXform_Text Schema) during the execution of the process flow. In this case, EvalXform_TextSchema is executed during the execution of the process flow.

This functionality is used when the actual activity to be executed is decided at execution time, not at design time of the process flow. For example, in a process flow that handles data coming in various formats, you have to first add the schema activity for each data format and then route the data to appropriate format using decision node. This results in the process flow being bulky and unmanageable. At times, you may even need to design one process flow for each data format. Now, this problem can be overcome by using the same process flow with a different schema activity. You can simply override the EvalXform_ExcelSchema with any other schema of your choice. For details on the type of activities that can be overridden refer to the Activities that can be overridden section.

There are two ways of overriding an activity in a process flow. They are outlined as:

- Overriding an activity using Custom Plugin
- Overriding an activity using put-context-var

Overriding an activity using Custom Plugin

You can override an activity by using a custom plugin activity just before the activity, which needs to be overridden by another activity.
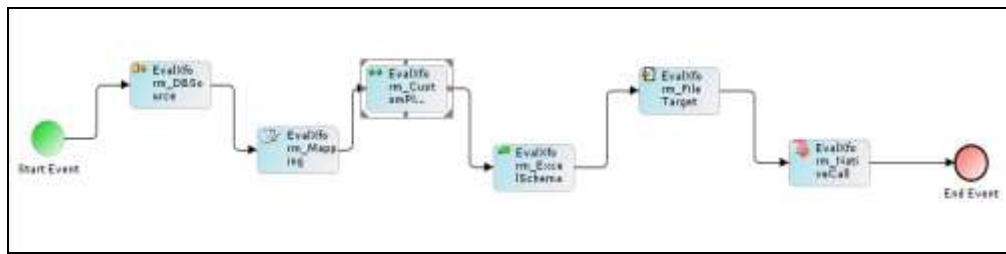
Figure 109: Overriding an Activity using Custom Plugin

As shown in Figure 109, the *EvalXform_CustomPlugin* activity is used just before the *EvalXform_ExcelSchema* activity.

The **setActivityParameter ( ) API** is used to override the activity.

The sample Java code, which is used to override a schema activity, is displayed in Figure 110.

```
context.setActivityParameter(ActivityName,"schemaTypedId",
activityType + ":" + dynamicActivityID);
```

Figure 110: Sample Java Code used to Override a Schema Activity

For all other activities the overriding is done using the Java code displayed in Figure 111.

```
context.setActivityParameter(activityName,"TypedId",activityType
+ ":" + dynamicActivityID);
```

Figure 111: Sample Java Code used to Override Activities

Table 11: Arguments used in Java Code

#	Name	Description	Example
1	activityName	Name of the activity, which is to be overridden	EvalXfrom_ExcelSchema
2	activityType	Activity Type of the activity, which will override the existing activity. To know the Activity Type of the activity refer to the <u>Activities that can be overridden</u> section.	TextSchema
3	dynamicActivityID	Entity Id of the activity, which will override the existing activity. To know the Entity Id of an activity, in Manage activity screen, click on the activity.	19216800100611553 7684214000004

Overriding an activity using put-context-var

You can override an activity using put-context-var action just before the activity, which needs to be overridden by another activity.

Steps to override an activity using put-context-var

1. Click hierarchy structure in the **Repository View** panel. Expand the **Action** list and select the **put-context-var** action and drag it to the Graph Canvas area just before the activity, which is to be overridden.

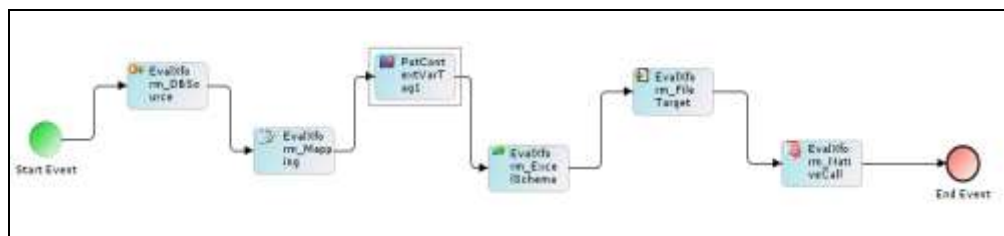2. Connect the put-context-var action to the activity (see Figure 112).

Figure 112: Connect Put-Context-Var to activity

3. Right-click **put-context-var** and select **View Properties.**

Its properties are displayed in the **Properties Panel** in the Bottom Pane (see Figure 113).
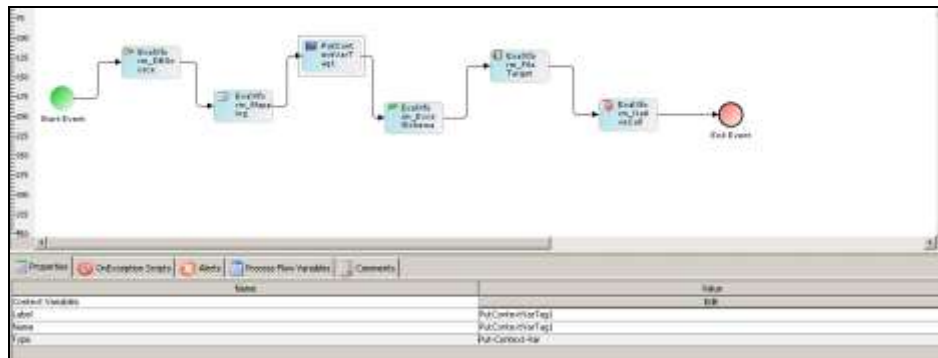

Figure 113: Properties of Put-Context-Var

4. Click the **Edit** button to edit the value of context variable. The *Edit Context Variables* dialog box is displayed.

5. Click **Add Variable** ( ) to add new context variable. The *Context Variable Information* screen is displayed.

6. Select the activity, which is to be overridden (for example, *EvalXform_ExcelSchema*) from **Activity Name** dropdown list.

7. Select SchemaTypedId (for Schema activity) or *TypedId* (for all other activities) from **Variable Name** dropdown list.

8. Enter the *Activity Type* and the *Entity Id* of the activity, which will override the existing activity in following format in the **Variable Value** field.

| Format | : | Activity Type: EntitiyID |
| For Example | : | TextSchema: 19216800100611553768421400004 |

> ℹ️ To know the Entity Id of an activity, in Manage activity screen, click the activity.

The entered information is displayed as shown in Figure 114.

Figure 114: Context Variable Details for Overriding an Activity

9. Click **Done** to close the **Context Variable Information** screen. This takes the control back to the **Edit Context Variables** screen. The newly created variable is added to the list of existing context variables.

10. Click **Done** to close **Edit Context Variables** screen and return to Process Designer.

11. Save the process flow and exit from Process Designer.

Activities that can be overridden

You can override many types of activities in a process flow. These are outlined as:

- Source Activity
- Target Activity
- Schema Activity
- Polling Activity
- Other Activities

Source Activity

Any type of source activity can be overridden by another type of source activity. For example, a file source activity can be overridden by an FTP source activity. The types of source activities, that can be overridden and their TypedId are listed in the table below.

Table 12: Source Types that can be Overridden

Source Type	Activity Type
Advanced Database Source	AdvancedDatabaseSource
Database Source	DatabaseSource
File Source	FileSource
FTP Source	FtpSource
HTTP Source	HttpSource
JMS Source	JmsSource
LAN File Source	LanFileSource
Mail Source	MailSource
WebDAV Source	WebdavSource

Target Activity

Any type of target activity can be overridden by another type of target activity. For example, a File Target activity can be overridden by an FTP target activity. The types of target activities, that can be overridden and their TypeId are listed in the table below.

Table 13: Target Types that can be Overridden

Target Type	Activity Type
Advanced Database Target	AdvancedDatabaseTarget
Database Target	DatabaseTarget
File Target	FileTarget
FTP Target	FtpTarget
HTTP Target	HttpPost
JMS Target	JmsTarget
LAN File Target	LanFileTarget
Mail Target	MailTarget
WebDAV Target	WebdavTarget

Schema Activity

Any type of schema activity can be overridden by another type of schema activity. For example, a text schema activity can be overridden by an excel schema activity. The types of schema activities, that can be overridden and their schemaTypedId are listed in the table below.

Table 14: Schema Types that can be Overridden

Schema Type	Activity Type
Excel Schema	ExcelSchema
Text Schema	TextSchema
XML Schema	XMLSchema
EDI Schema	EDISchema
Advanced Positional Schema	AdvancePositionalSchema
Positional Schema	PositionalSchema

Polling Activity

Any type of polling activity can be overridden by another type of polling activity. For example, a file polling activity can be overridden by a mail polling activity. The types of polling activities, that can be overridden and their TypeId are listed in the table below.

Table 15: Polling Types that can be Overridden

Possible Polling Type	Activity Type
Database Polling	DatabasePollingService
File Polling	FilePollingService
FTP Polling	FtpPollingService
Mail Polling	MailPolling

Other Activities

All other types of activity can be overridden by exactly the same type of activity. For example, a Custom Plugin activity can be overridden by another Custom Plugin activity only. Similarly, a Data Mapper activity can be overridden by another Data Mapper activity only. All other types of activities, that can be overridden and their TypeId are listed in the table below.

Table 16: Other Activity Types that can be Overridden

Activity	Activity Type
Data Mapping	DataMapping
Record to Record	ScriptedRecord2RecordTransformer
Custom Plugin	CustomPlugin
Human Workflow	HumanInteraction
Context Download	ContextDownload
Context Upload	ContextUpload
MIME Message:	
Decoder	MessageExtractor
Encoder	MessageComposer

Activity	Activity Type
Custom Report	IndigoReport
Native Call	NativeCall
Mail Notification	MailNotification
Web Service:	
WsMessage Call	WsMessageCall
WsRpc Call	WsRpcCall

Overriding subject and body of email sent for a Human Workflow Task

The subject of emails sent when a Human Workflow task is created/updated, is already pre-defined in the code. Now, you can override this subject by using *put-context-var* action.

Steps to override email subject using put-context-var

1. Click hierarchy structure in the **Repository View** panel. Expand the **Action** list and select the **put-context-var** action and drag it to the Graph Canvas area before the human work flow task whose email subject is to be overridden.

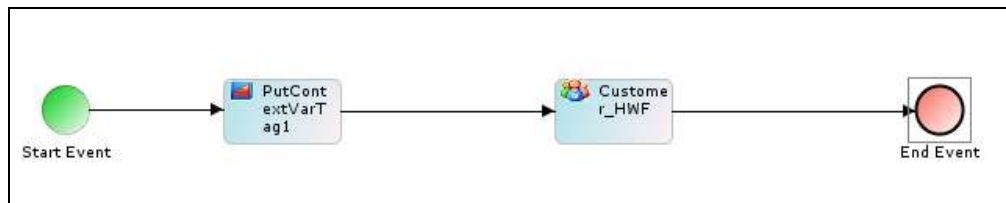2. Connect the *put-context-var* action to the task (see Figure 115).

Figure 115: Connect put-context-var to Human Workflow task

3. Right-click the **put-context-var** and select **View Properties**. Its properties are displayed in the **Properties Panel** in the Bottom Pane.

4. Click the **Edit** button to edit the value of context variable. The **Edit Context Variables** dialog box is displayed.

5. Click the **Add Variable** ( ) to add new context variable. The *Context Variable Information* screen is displayed.

6. Select the task, which is to be overridden (for example, Customer_HWF) from the dropdown list **Activity Name**. All variables of this task are listed in the dropdown list **Variable Name**.

7. Select **emailSubject** from the dropdown list **Variable Name**.

8. Enter the new email subject that you want to display in the **Variable Value** field. You can also define the subject as extracted from a variable, by entering $$ variable name $$ in the **Variable Value** field.

    The entered information is displayed as shown in Figure 116.

Figure 116: Context Variable Details for Overriding email subject

9. Click **Done** to close the **Context Variable Information** screen. This takes the control back to the **Edit Context Variables** screen. The newly created variable is added to the list of existing context variables.

10. Click **Done** to close **Edit Context Variables** screen and return to Process Designer.

11. Save the process flow and exit from Process Designer. When you execute this process flow, and an email for a new task is sent, then 'New Task' is appended in the email subject. This is pre-defined in the code and is displayed when you override the email subject. It is subject to change, based on the action performed. If an existing task is deferred, then 'Deferred Task' is appended.

> Similarly, you can dynamically override the first line of the email subject.

Overriding Assignee User of a Human Workflow Task

You can dynamically override the assignee (user to whom task is assigned) of a Human Workflow activity, during the execution of a process flow using *put-context-var* action.

Steps to override assignee using put-context-var

1. Click hierarchy structure in the **Repository View** panel. Expand the **Action** list and select the **put-context-var** action and drag it to the Graph Canvas area before the Human Work flow task assignee is to be overridden.

2. Connect the *put-context-var* action to the task (refer to Figure 115).

3. Right-click the **put-context-var** and select **View Properties**. Its properties are displayed in the Properties Panel in the Bottom Pane.

4. Click the **Edit** button to edit the value of context variable. The **Edit Context Variables** dialog box is displayed.

5. Click the **Add Variable** ( ) to add new context variable. The **Context Variable Information** screen is displayed.

6. Select the task, which is to be overridden (for example, *Customer_HWF*) from the dropdown list ***Activity Name***. All variables of this task are listed in the dropdown list **Variable Name**.

7. Select **hiReceiverUsers** from the dropdown list **Variable Name**.

8. Enter the User Id of the user to whom you want to assign the Human Workflow task, in the textbox **Variable Value**.

The entered information is displayed as shown in Figure 117.

Figure 117: Context Variable Details for Overriding email subject

9. Click **Done** to close the *Context Variable Information* screen. This takes the control back to the screen **Edit Context Variables**. The newly created variable is added to the list of existing context variables.

10. Click **Done** to close the **Edit Context Variables** screen and return to Process Designer.

11. Save the process flow and exit from Process Designer. When you execute this process flow, the process will be assigned to user (for example *John* instead of *Administrator*) to whom it was originally assigned.

PROCESSING RECORD QUEUE

By default, during the execution of process flow, the entire input data is processed at a time. Adeptia allows you to process the input data record-by-record. To process the data record-by-record, Record Queue Processor is used. Using Record Queue Processor, you can:

- Process the input data record-by-record
- Specify the number of records to be processed

How Record Queue Processor works?

Record Queue Processor consists of *Record Queue Producer* and *Record Queue Receiver*. *Record Queue Producer* is an asynchronous activity, which sets records one by one in a queue and waits for it to get consumed by *Record Queue Receiver*. *Record Queue Receiver* consumes the record from the queue and produces a stream. This stream can be further processed by other activities of the process flow. Once the record is consumed by *Record Queue Receiver*, *Record Queue Producer* sets the next record and waits for it to get consumed by *Record Queue Receiver*. This loop continues until all the records are queued and processed. Once all the records are processed, the loop is broken and the process flow stops.

The usage of the Record Queue Processor is explained in Figure 118.
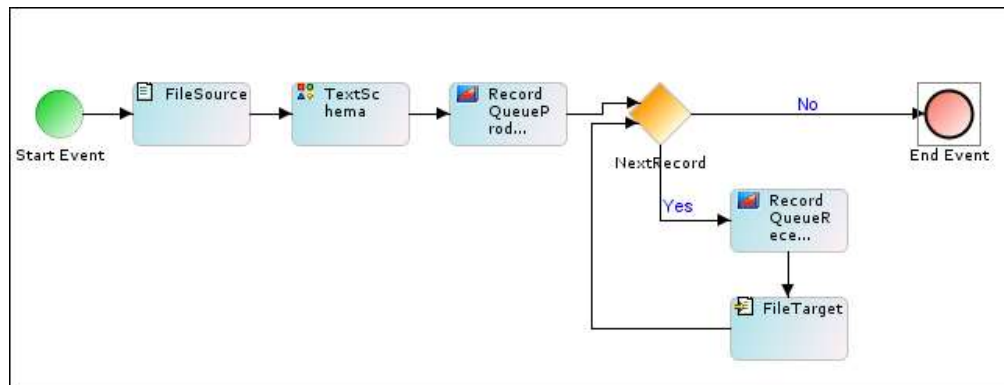

Figure 118: Using Record Queue Processor

As shown in the figure above, data from *File_Source* is consumed by *Text_Schema*, which further passes it to Record Producer. Record Producer takes the first record and sets it into Queue as specified by Record Queue Producer properties. Gateway is used to check availability of records. Following is the code, which is used at Gateway to check the availability of the record in queue.

```
String queue = context.get("Service.queueName.nextRecord");
if(queue.equals("true")){
 return true;
}
return false;
```

Where queueName is the name of the queue specified in *Record Queue Producer*. "*nextRecord*" is a variable which is used to decide whether the record is available in the queue or not. Value of the variable *NextRecord* can be true or false. When *Record Queue Producer* sets a record in the queue, the value of *nextRecord* variable become true. If the value is true, it means the next record is available in queue for processing. In this case *Record Queue Receiver* takes the record from queue, changes the value of *nextRecord* variable to false and passes the record to File Target. In the meantime *Record Queue Producer* again sets the record in the queue and changes the value of *nextRecord* to true and waits for it to get consumed by *Record Queue Receiver*. If the value of *NextRecord* variable is not changed to true, it means there is no record available for processing and the record queue processor is stopped.

Steps to process records using Record Queue Producer and Record Queue Receiver

1. Click hierarchy structure in the **Repository View** panel. Expand the Activities list of the Adeptia Server and select and drag the File source and Text schema activities to the Graph Canvas area.

2. Select the RecordQueueProducer activity and drag it to the Graph Canvas area.

3. Drag a gateway element to the Graph Canvas area.

4. Drag a File Target to the Graph Canvas area.

5. Select the RecordQueueReceiver activity and drag it to the Graph Canvas area.

6. Connect all the activities as shown in Figure 118.

7. Right-click **RecordQueueProducer** and select **View Properties**. Its properties are displayed in the **Properties** Panel in the Bottom Pane (see Figure 119).
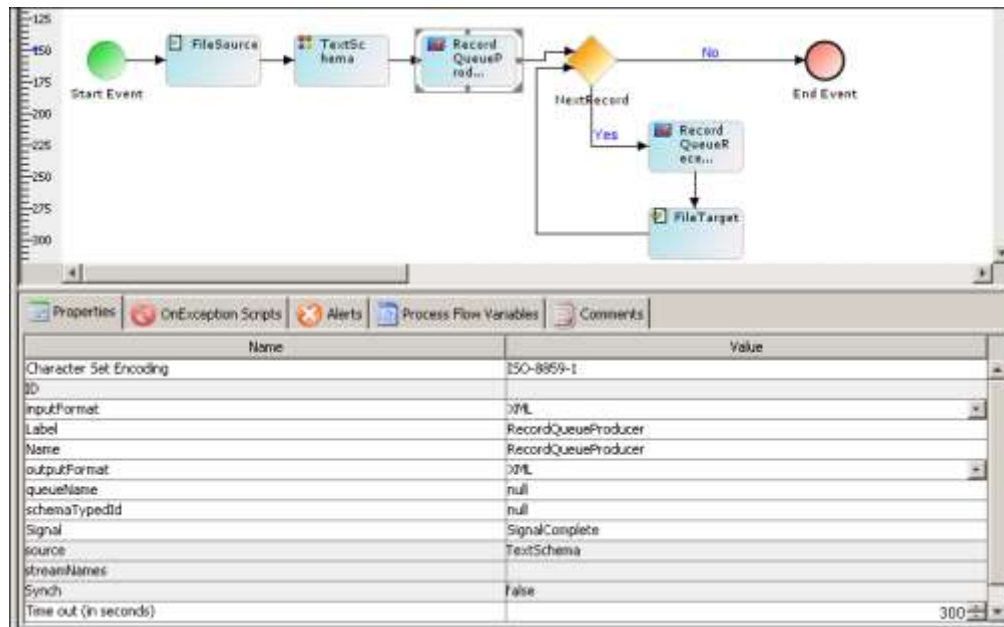

Figure 119: Properties of RecordQueueProducer

8. Set the appropriate properties for the RecordQueueProducer. For details on the properties and their description, refer to the table below.

Table 17: Record Queue Producer Properties

Properties	Description
Character Set Encoding	Character set encoding that is used for parsing, incase input data is XML. By default it is ISO-8859-1
InputFormat	Format of the input data. It can be XML or Native.
Label	Label of the Record Queue Producer activity displayed in the Graph Canvas area.
Name	Name of the Record Queue Producer activity. By default, it is Record Queue Producer.
OutputFormat	Format of the output record. It can be XML or Native.
schemaTypedId	TypedId and the 30 digit activity ID of the source schema separated by colon (:). For example TextSchema:192168001158117196729809300003 To know the TypedID of Schema refer to Table 14.

Properties	Description
	To know the 30 digit activity, click the activity name from the manage page. The 30 digit activity Id along with other properties are shown.
Source	Name of the Activity, which is passing the record to Record Queue Producer. By default this field is populated. You cannot edit this field.
streamNames	Record Queue Producer doesn't produce any stream. This field remains blank.
queueName	Enter any queue name. This will be the queue name in which records are set. QueueName must be same as sourceQueueName of Record Queue Receiver activity used in the process flow.
Sync	Specifies whether the activity will be executed in Sync mode or A-sync mode. Record Queue Producer is always executed in a-sync mode. This field is non-editable. To know more about Sync and A-sync mode of execution, refer to the section Working with Process Flow.
Type	Type of the activity. By default this field is populated. This field is non-editable.

9. Right-click **RecordQueueReceiver** and select **View Properties**. Its properties are displayed in the **Properties Panel** in the Bottom Pane (see Figure 120).

Figure 120: Properties of RecordQueueReceiver

12. Set the appropriate properties for the *RecordQueueReceiver*. For details on the properties and their description, refer to the table below.

Table 18: Record Queue Receiver Properties

| Properties	Description
Label	Label of the Record Queue Producer activity displayed in the Graph Canvas area.
Name	Name of the Record Queue Producer activity. By default, it is Record Queue Producer.
Source	Record Queue Receiver does not consume any stream. This field remains blank.
streamNames	Name of the stream produced by Record Queue Receiver.
SourceQueueName	Enter the name of the queue from which Record Queue Receiver will fetch the record. sourceQueueName must be same as QueueName of Record Queue Producer activity used in the process flow.
Synch	Specifies whether the activity will be executed in Synch mode or Asynch mode. Record Queue receiver can be executed in Asynch or Synch mode. To know more about Synch and Asynch mode of execution, refer to the section [Working with Process Flow](#).
Type	Type of the activity. By default this field is populated. You cannot edit this field.

Based on the selected properties for the *RecordQueueProducer* and *RecordQueueReceiver*, and the code specified for the Gateway element, the records are processed.

> ℹ️ Record processing can be stopped based on specified conditions. If the condition is met, then the signal is set by the *RecordQueueReceiver* to stop further processing of records.

ADDING CONDITIONS IN PROCESS FLOW

Conditions determine whether a certain transition is executed in a process flow. Conditions are used to change the direction of the process flow based on a decision. There are three types of conditions:

- Process Flow Variable Condition
- Java Condition
- Expression Condition Builder

Process Flow Variable Condition

A transition can have condition based on the value of the context variable present in the current process flow. Once the condition is met, transition takes place. The Process Flow Variable Condition can be of two types:

- Activity Attributes Condition: Activity Attribute Condition is used to define condition based on the value activity specific context variable in a process flow.
- Other Condition: Other Condition is used to define condition using pre-created context variables.

> ℹ️ Process Designer allows Conditions to be added only for uncontrolled or default flow having gateway as its source. User cannot enter Condition for Association and Direction association flow under any circumstances.

Adding Condition Using Process Flow Activity Attributes

Steps to add a Condition in a Process Flow using Activity Attributes

1. Select the **Gateway** (   ) element in the Palette and drag it to required place in the Graph canvas area. The Gateway element is displayed in the Graph canvas area (see Figure 121).

Figure 121: Drag Gateway Element to Graph Canvas Area

2. Connect the activities with the Gateway element using uncontrolled or default control flow (see Figure 122).
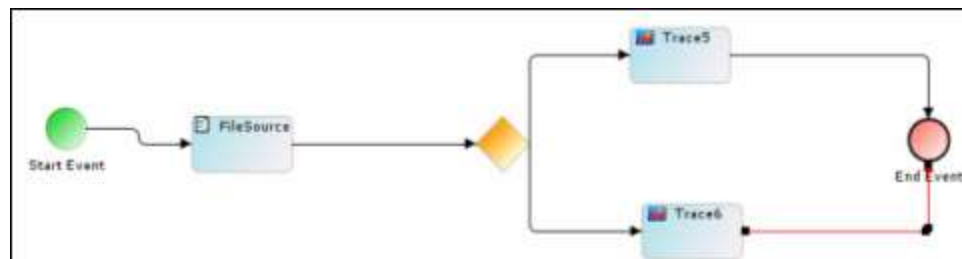
Figure 122: Connecting Elements

> ℹ️ To learn how to connect activities, refer to the Creating Process Flow section.

3. To add Condition, right-click control flow and select **View Properties**. The properties of the control flow are displayed in the Properties Panel in the Bottom Pane (see Figure 123).
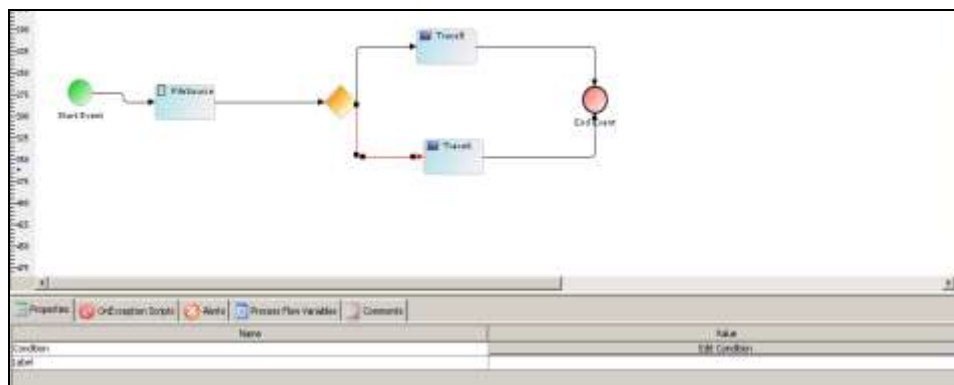
Figure 123: Change Gateway Element Properties

4. Click the **Edit Condition** button. The **Condition Wizard** screen is displayed (see Figure 124).
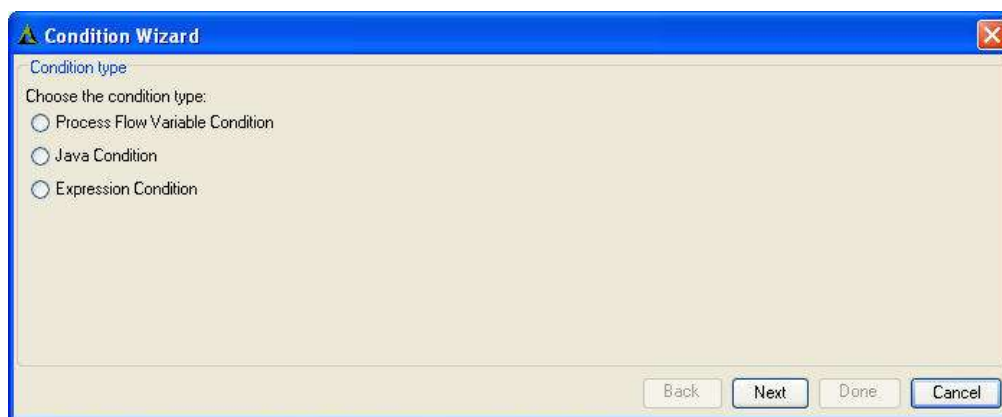
Figure 124: Condition Wizard

5. Select the **Process Flow Variable Condition** and click the **Next** button. The **Choose Process Flow Variable Condition Type** screen is displayed (see Figure 125).
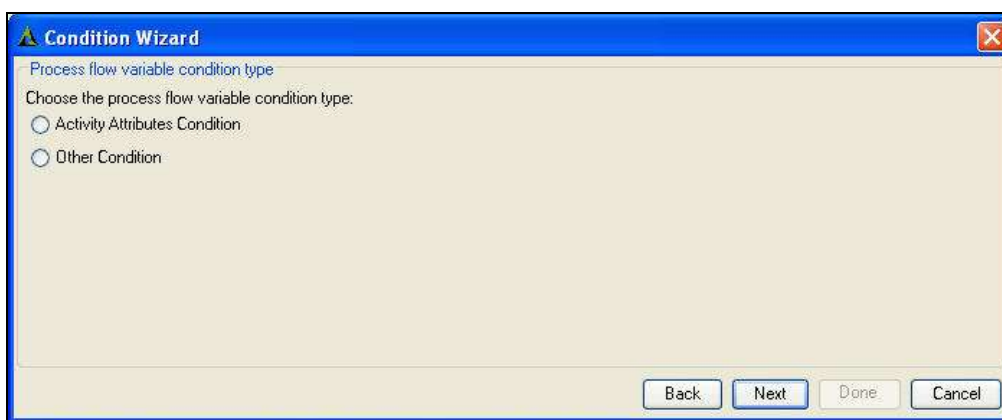

Figure 125: Select Process Flow Condition Type

6. Select the **Activity Attribute Condition** and then click the **Next** button.

The **Activity Attributes Condition** screen is displayed (see Figure 126).

Figure 126: Activity Attributes Condition

7. Select the activities of the process flow from the dropdown list **Existing Activities**.

8. Select the attribute of the selected activity from the **Activity Attributes** dropdown list.

9. Select the data types of the value contained by the above specified attribute from the **Operand Type** dropdown list. The data types supported for the value are listed in the table below.

Table 19: Data Types Supported for Operand Type Value

Data Type	Description
Number	This data type is selected if the specified activity attribute contains numeric value. For example, 1, 12.
Text	This data type is selected if the specified activity attribute contains text value. For example, abc, xyz.
Decimal	This data type is selected if the specified activity attribute contains decimal value. For example, 10.211, 100.50. The decimal precision can be defined under the decimal precision text field.

10. Select the operator's type from the Operators dropdown list. The operators supported are "=", "! =", ">", "<", ">=", "<=".

11. Enter or select the value of the above specified attribute from the **Value** dropdown list.

12. Specify the decimal precision (only if operand type is "Decimal") under the **Decimal Precision** text field.

13. Click **Done** button to close the Condition Wizard and return to the Graph Canvas.

14. Repeat steps 4 to 14 to add condition on another control flow.

Adding Condition Using Process Flow Variable Other Condition

Using Process Flow Variable we specify that if the value of a specified variable is equal to the defined value, the transition will execute.

Prerequisites

- Process Flow variable must be created. To learn how to create process flow variable, refer to the <u>Creating Process Flow Variable</u> section.

Steps to add a Condition in a process flow using Process Flow Variable

1. Select the **Gateway** ( )element in the Palette and drag it to required place in the Graph canvas area. The Gateway element is displayed in the Graph Canvas area (refer to Figure 121).

2. Connect the activities with the Gateway element using uncontrolled or default control flow (refer to Figure 122).

> ℹ️ To learn how to connect activities, refer to <u>Creating Process Flow</u> section.

3. To add Condition, right-click control flow and select **View Properties**. The properties of the control flow are displayed in the **Properties Panel** in the Bottom Pane (refer to Figure 123).

4. Click the **Edit Condition** button. The **Condition Wizard** screen is displayed (refer to Figure 124).

5. To use Condition using Process Flow Variable, select the **Process Flow Variable Condition** and click **Next** button. The **Select Process Flow Condition Type** screen is displayed.

6. Select Other Condition and then click Next button. The **Other Condition Process Details** screen is displayed (see Figure 127).

Figure 127: Other Condition Process Details

7. Select the Process Flow Variable from the **Name** dropdown list and enter the Value in the **Value** field.

8. Select the data types of the value contained by the above specified context variable from **Operand Type** dropdown list. For information regarding data types supported for the value refer to Table 19.

9. Select the operator's type from the **Operators** dropdown list. The operators supported are "=", "! =", ">", "<", ">=", "<=".

10. Enter the value of the above specified context variable in the **Value** field.

11. Specify the decimal precision (only if operand type is "Decimal") under the **Decimal Precision** field.

12. Click **Done** button to apply the condition and return to the Graph Canvas.

Java Condition

A transition can have condition, which can be in form of script. Once the condition is met, transition takes place. Java Condition is a part of transition.

The sample conditional transition is given as below:

```
<transition from="state.2" to="state.4">
        <guard>
            <indigo:scripted-guard>
                <![CDATA[
                                ..script
                    ]]>
            </indigo:scripted-guard>
        </guard>
</transition>
```

A State in Process XML either has normal transition(s) and/or conditional transition(s). If there are more than one transition from a State, only one transition takes place at a time and it depends upon the order of their occurrence and condition satisfaction (in case conditional transition). Conditional transition takes place based on appropriate condition defined in form of java code. When the condition is met, transition takes place. A Condition is satisfied when java code script returns true. The Java code script should return true or false otherwise exception is raised.

Adding Condition Using Java Condition

Steps to add a Condition in a process flow using Java Condition

1. Select the **Gateway** (   )element in the Palette and drag it to required place in the Graph canvas area. The Gateway element is displayed in the Graph canvas area (refer to Figure 121).

2. Connect the activities with the Gateway element using uncontrolled or default control flow (refer to Figure 122).

    > **i**   To learn how to connect activities, refer to Creating Process Flow section.

3. To add Condition, right-click control flow and select **View Properties**. The properties of the control flow are displayed in the Properties Panel in the Bottom Pane (refer to Figure 123).

4. Click **Edit Condition** under the Properties tab. The Condition Wizard screen is displayed.

5. To define Condition using Java Condition, select the **Java Condition** and click **Next** button. The Java **Condition Wizard** window is displayed (see Figure 128).
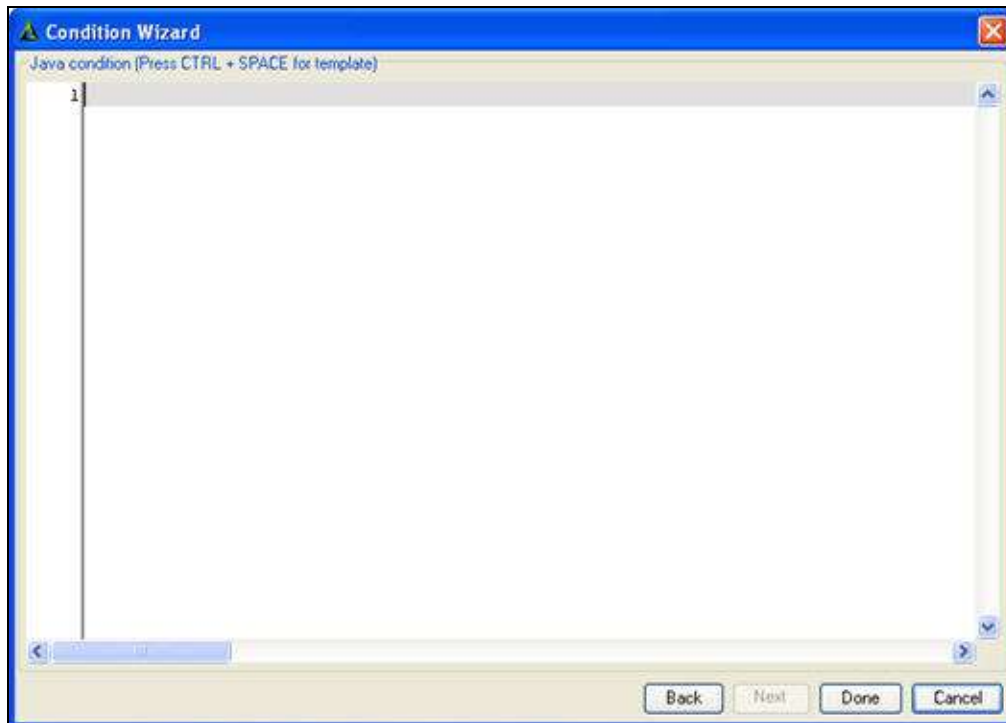
Figure 128: Enter Java Condition

6. Enter the Java Code in the *Java Condition* field and click **Done** button to return to the Graph Canvas area.

> You can use **<CTRL>+<Space Bar>** to view pre-defined template of Java Code, which can be used in creating Java Condition. You can select any of them and edit it according to your requirement.

7. Similarly, repeat steps 4 to 7 to add Condition to another control flow.

Expression Condition Builder

A transition can have condition based on an expression. This expression is built using the Activity Attributes or the Process Flow variable with the 'AND' & 'OR' condition.

Adding Condition Using Expression Builder

Using Activity Attributes and Process Flow variables, and the 'AND' or 'OR' conditions, you can generate an expression.

Steps to add a Condition in a process flow using Expression Builder

1. Select the **Gateway** ( ) element in the Palette and drag it to required place in the Graph canvas area. The Gateway element is displayed in the Graph Canvas area (refer to Figure 121).

2. Connect the activities with the Gateway element using uncontrolled or default control flow (refer to Figure 122).

> ℹ️ To learn how to connect activities, refer to Creating Process Flow section.

3. To add Condition, right-click control flow and select **View Properties**. The properties of the control flow are displayed in the Properties Panel in the Bottom Pane (refer to Figure 123).

4. Click the **Edit Condition** button. The Condition Wizard screen is displayed.

5. To use Condition using Expression Builder, select the **Expression Condition** and click **Next** button. The **Condition Wizard** screen is displayed (see Figure 129).
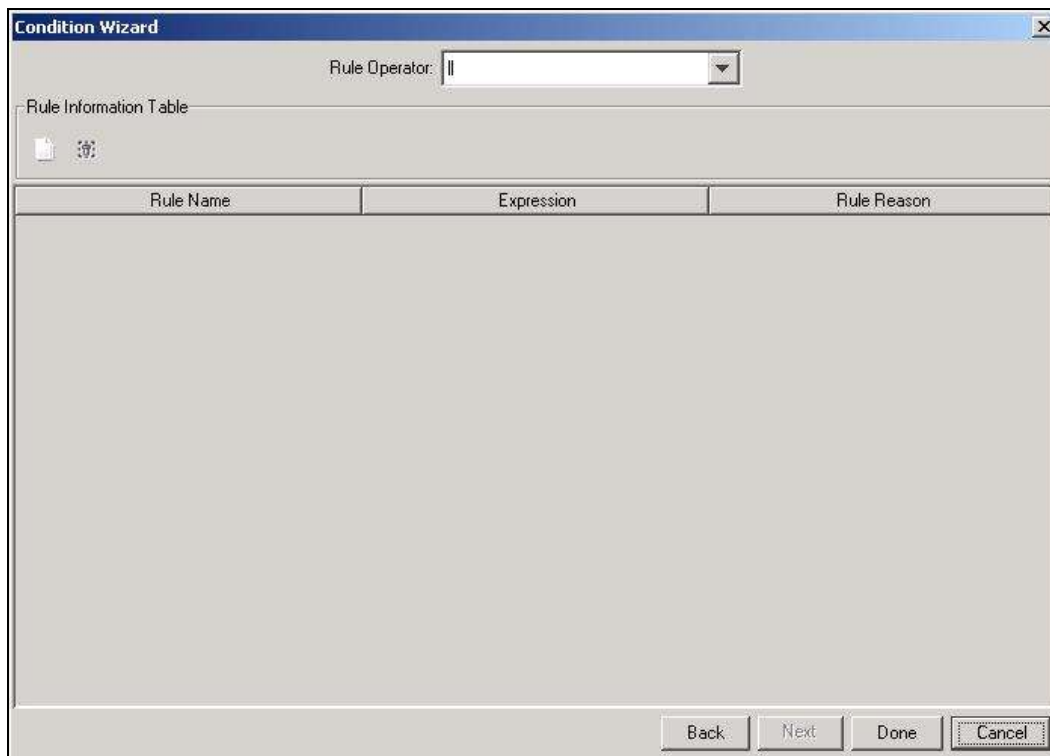
Figure 129: Condition Wizard

For defining expressions you need to define rules. A rule supports multiple expressions. You can link the multiple expressions using the rule operator.

6. Click **Add Rule** ( ) to add a new rule. This displays the **Rule Information** screen (see Figure 130).
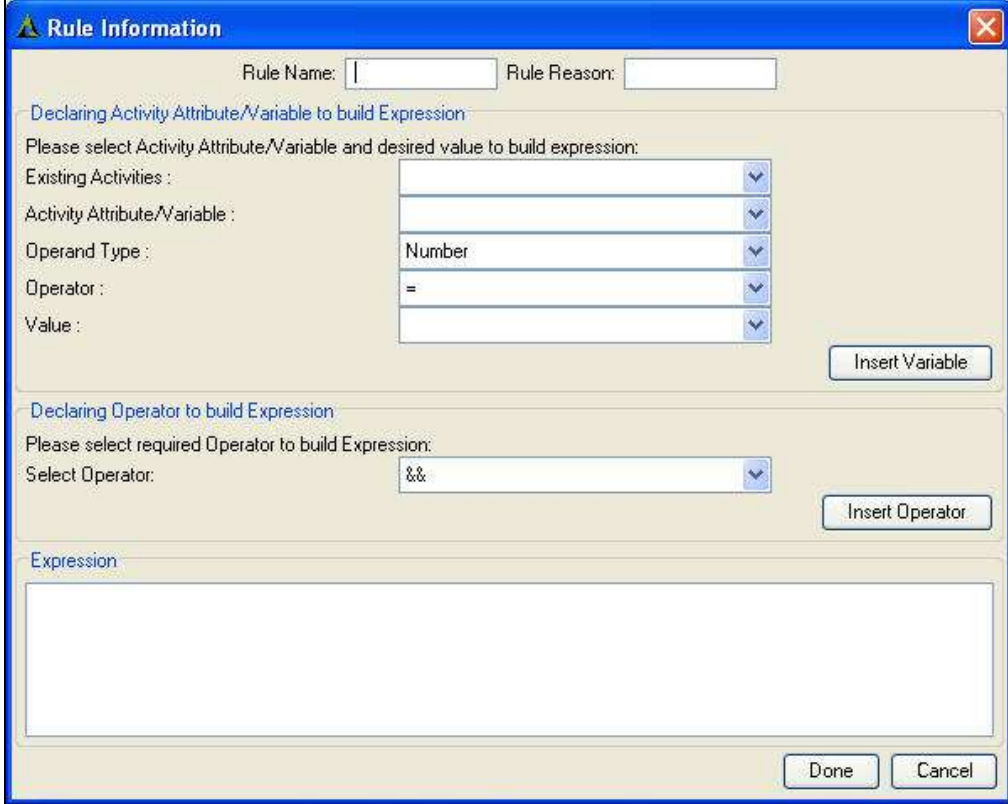
Figure 130: Rule Wizard

7. Enter the name of the Rule (for example, Rule 1) in the **Rule Name** field.

8. Enter the reason on the basis of which the rule will be evaluated as true or false (for example, Rule 1 is valid), in the **Rule Reason** field. This is set in the context.

9. To build the expression, you first need to select the Activity Attribute or Process Flow variable to be used in the expression. Select the activity to be used, from the **Existing Activities** dropdown menu. This dropdown is populated with the current activities. Alternately, if you select a blank value, then a process flow variable is selected.

10. Select the activity attribute or the process flow variable, from the **Activity Attribute/Variable** dropdown menu. This dropdown is populated with values based on the selection in the **Existing Activities** field. If an activity is selected, then this dropdown lists all attributes of the selected activity. If a process flow variable is selected, then this dropdown lists the currently available process flow variables.

11. Select the data type of the selected activity attribute or process flow variable, from the **Operand Type** dropdown menu. This dropdown is populated with values of Number, Text (String) and Decimal. These are description are outlined in the table below.

Table 20: Data Types Supported for Operand Type Value

Data Type	Description
Number	This data type is selected if the specified activity attribute contains numeric value. For example, 1, 12.

Data Type	Description
Text	This data type is selected if the specified activity attribute contains text value. For example, abc, xyz.
Decimal	This data type is selected if the specified activity attribute contains decimal value. For example, 10.211, 100.50. The decimal precision can be defined under the decimal precision text field.

12. Select the operator to be applied on the activity attribute or process flow variable, from the *Operator* dropdown menu. This dropdown is populated with values based on the selection in the *Operand Type* field. The possible Operator values for various Operands are listed in the table below.

Table 21: Possible Operators for Operands

Data Type	Description
Number	=, !=, <, >, <=, >=
Decimal	=, !=, <, >, <=, >=
Text	Equal, Not Equal, Equal Ignore Case and Not Equal Ignore Case

13. Select the value for the activity attribute or process flow variable that needs to be verified, from the **Value** dropdown menu. This dropdown is editable. The **Number Operand** type should be of data type *Long*. The **Decimal** Operand type should be of **Double** data type.

14. Click **Insert Variable** to insert the defined condition (comprising of activity attribute or process flow variable) into the **Expression** text area, displayed at the bottom of the screen.

15. Once the activity attributes or process flow variable is inserted, you can create another condition for building the expression. Select the condition to be used for building the expression, from the **Select Operator** dropdown menu. This dropdown is populated with values of && (AND) and || (OR).

16. Click **Insert Operator** to insert the selected operator into the Expression text area.

17. Both the conditions are displayed in the Expression text area. You can edit this expression for evaluation based on certain rules. These rules are outlined in the table below.

Table 22: Rules for Evaluation
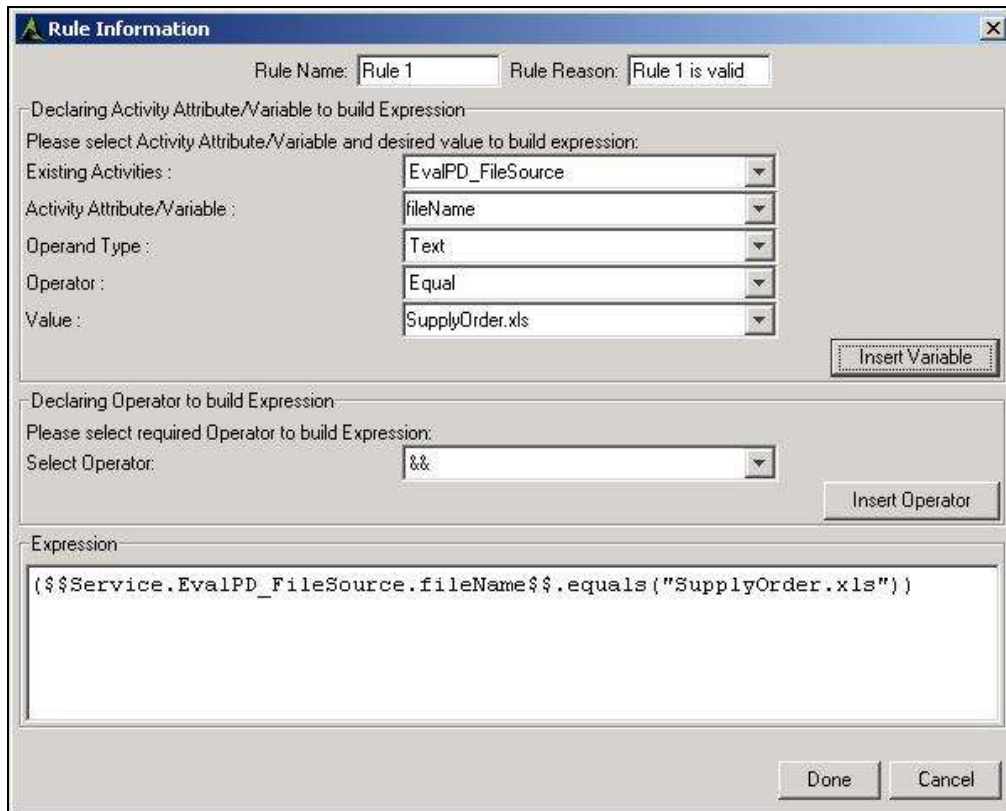
Object	Rule
Activity Attribute/Process Flow Variable	It is to be displayed between $$. For example, Activity Attribute will be displayed as $$ Service. Activity. *Activity Attribute* $$ Process Flow variable will be displayed as $$ *var1* $$
Operand Text	• All values are enclosed within double quotes. For example,

Object	Rule
	("text").
	• Values having '\' are replaced by '\\'.
	• Values having double quotes (") are replaced by single quotes (').
Operator Equal	The condition is replaced as ($$var$$.equals ("text")).
Operator Not Equal	The condition is replaced as! ($$var$$.equals ("text")).
Operator Equal Ignore Case	The condition is replaced as ($$var$$.equalsIgnoreCase ("text")).
Operator Not Equal Ignore Case	The condition is replaced as! ($$var$$.equalsIgnoreCase ("text")).

If an invalid expression is entered in the Expression text area, the transaction will abort.

The information is displayed in the **Rule Information** screen as in Figure 131.

Figure 131: New Rule Information

18.   Click **Done**.

This returns the control to the **Condition Wizard** screen with the newly added rule. Similarly, you can add more rules. They are displayed in the **Condition Wizard** screen (see Figure 132).
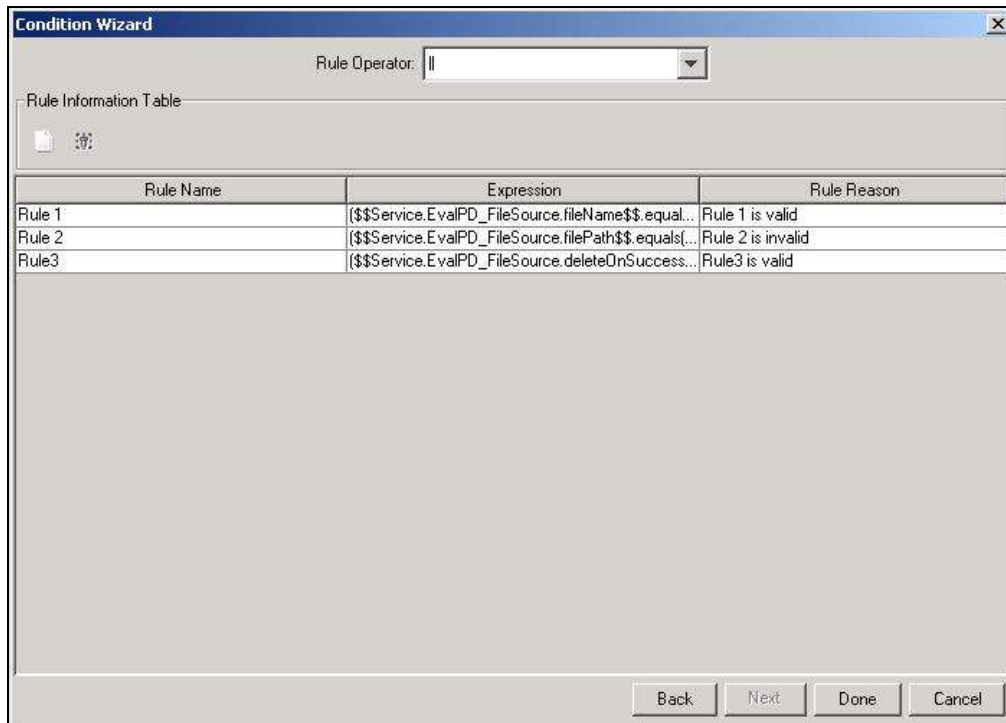
Figure 132: Added Rules

> You can edit the *Rule Name* and *Rule Reason* from this screen.

19. Select the operator on the basis of which you want to evaluate these rules, from the **Rule Operator** dropdown list. The various rule operators are outlined in the table below.

Table 23: Rule Operators

Rule Operator	Description
||	This evaluates the rules based on the OR operator. If any of the listed rules is true, then the decision value in the process flow will be executed as true.
&&	This evaluates the rules based on the AND operator. If all the listed rules are true, then only the decision value in the process flow will be executed as true. If any of the listed rules is false, then the decision value will be executed as false.

20. You can evaluate the rules using one operator at a time. For example, if you select \|\|, then all rules will be evaluated on the basis of the OR operator. You cannot evaluate two rules (for example, Rule 1 and Rule 2) based on OR operator and two rules (for example Rule 2 and Rule3) based on the AND operator.

21. Click **Done**. This closes the **Condition Wizard** screen and returns to the Graph Canvas.

Once you execute the process flow, all the listed rules will be evaluated in top to bottom sequential order.

If they are evaluated using the *OR (||)* rule operator, then if any of the listed rules is true, then the decision value will be true and the process flow will be executed in the True path. The reason for all rules that are evaluated as True, will be added as comma separated values and set as a single value in the context variable *ruleReason* in the format *ruleName (ruleReason)*.

If the rules are evaluated using the *AND (&&)* rule operator, then only if all the listed rules are true, then the decision value will be true and the process flow will be executed in the True path. Even if one rule is evaluated to false, then the decision value will be false and process flow will execute in the False path. The reason for all rules that are evaluated as True, will be added as comma separated values and set as a single value in the context variable *ruleReason* in the format *ruleName (ruleReason)*. The rules that are evaluated as False, will appear as an empty value in the *ruleReason* context variable.

DEFINING SEQUENCE FLOW ORDERING

When more than one sequence flow is attached with an activity, the transition that was dragged first will be executed before the transition dragged later. You can specify the ordering of the execution of the transitions.

Steps to define sequence flow ordering

1. Right-click the activity in the Graph Canvas to which more than one sequence flow is attached and select Sequence Flow Ordering (see Figure 133).
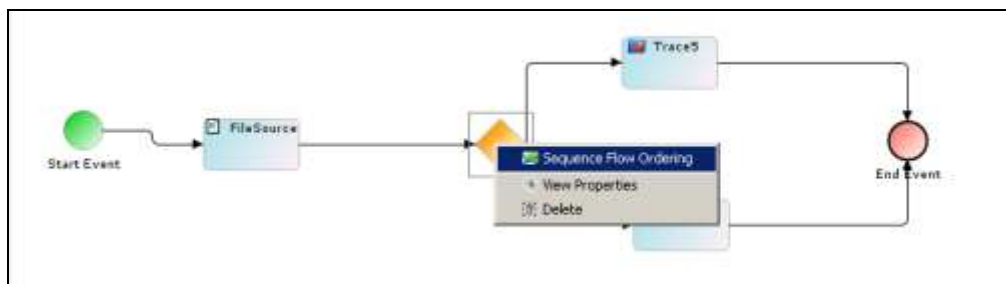
Figure 133: Define Sequence Flow Ordering

2. The **Sequence Flow Ordering** screen is displayed (see Figure 134).
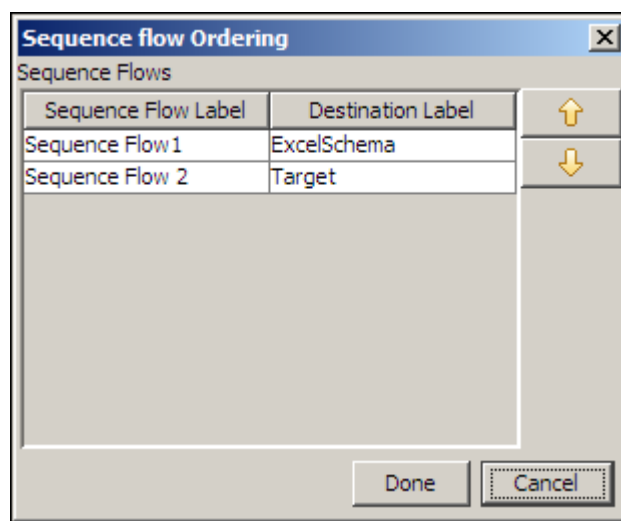
Figure 134: Sequence Flow Ordering

3. Select the required activity and move it using **Up** (⬆) and **Down** (⬇) arrow buttons to define the sequence.

4. Click **Done** button to return to the Graph Canvas.

CREATING MULTIPLE STREAMS

Stream represents the flow of data in a process flow. Multiple streams are used when the output of an activity needs to be sent to two or more activities in a process flow.

Steps to create multiple streams for an activity

1. Right-click the activity in the Graph Canvas from which multiple streams are to be generated and then select **Multiple Streams**. The *Multiple Stream Dialog* screen is displayed (see Figure 135).
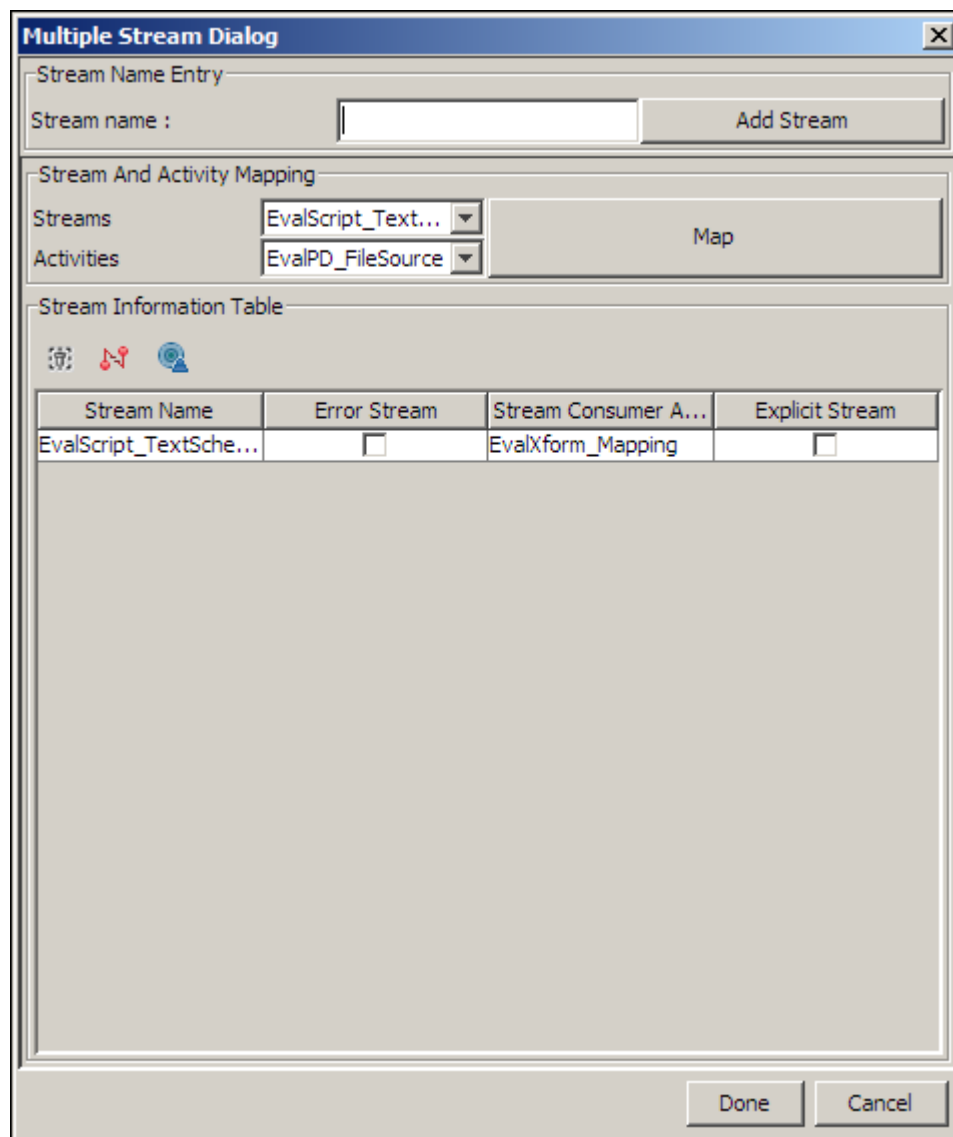
Figure 135: Multiple Stream Dialog Box

2. In the Stream Information Table, the existing stream is displayed. If you want to delete the existing stream, click on the stream to select it and then click **Delete Stream** (🗑) button. The selected stream is deleted.

3. To create a new stream, enter the name for the Stream in the **Stream Name** field and then click **Add Stream** button. The name of the added Stream is displayed in the **Streams** dropdown list (see Figure 136).
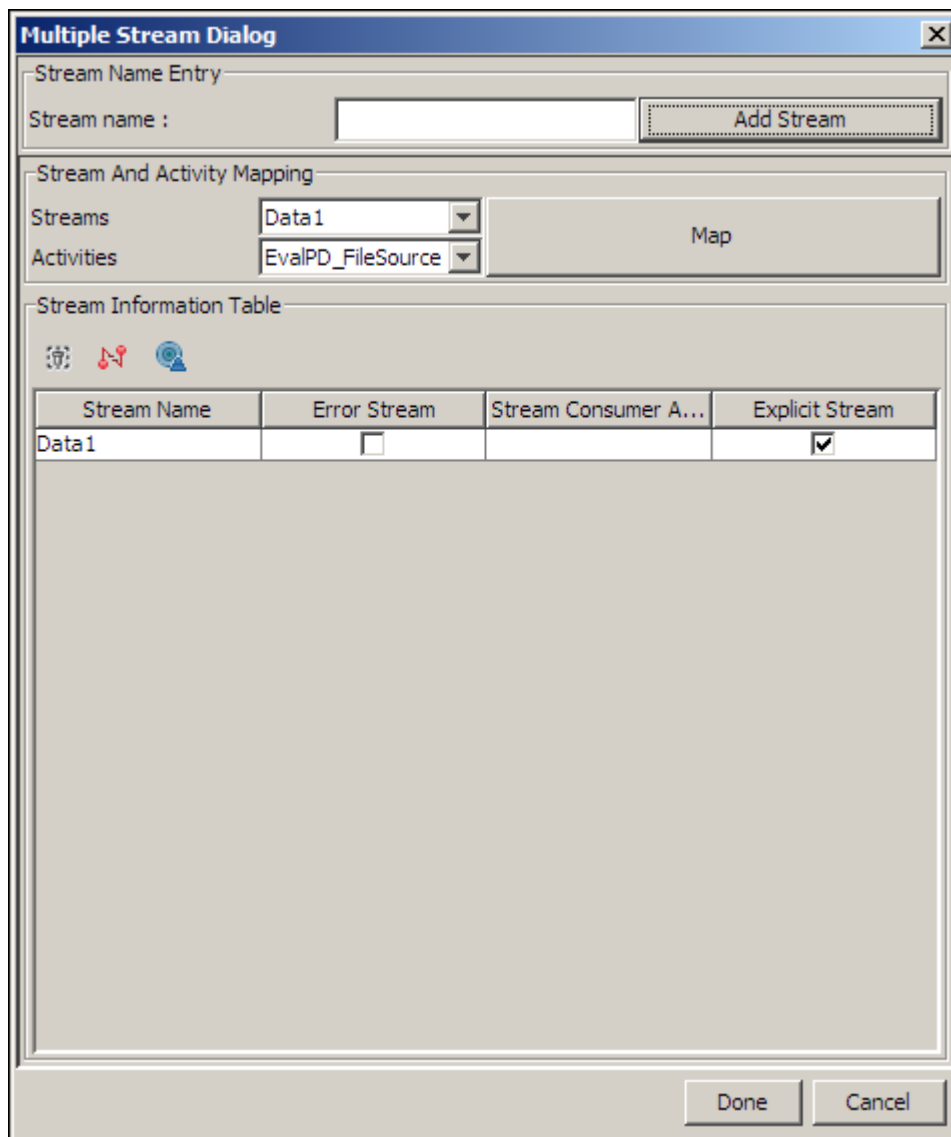
Figure 136: New Stream Added

4. The Activity which will consume the stream currently selected in the *Streams* dropdown list is already displayed, however to change it, select the activity from the **Activities** dropdown list, and then click **Map** button. The mapped stream and the activity are displayed in the **Stream Information** Table (see Figure 137).

5. Ensure that the *Explicit Stream* checkbox is selected.
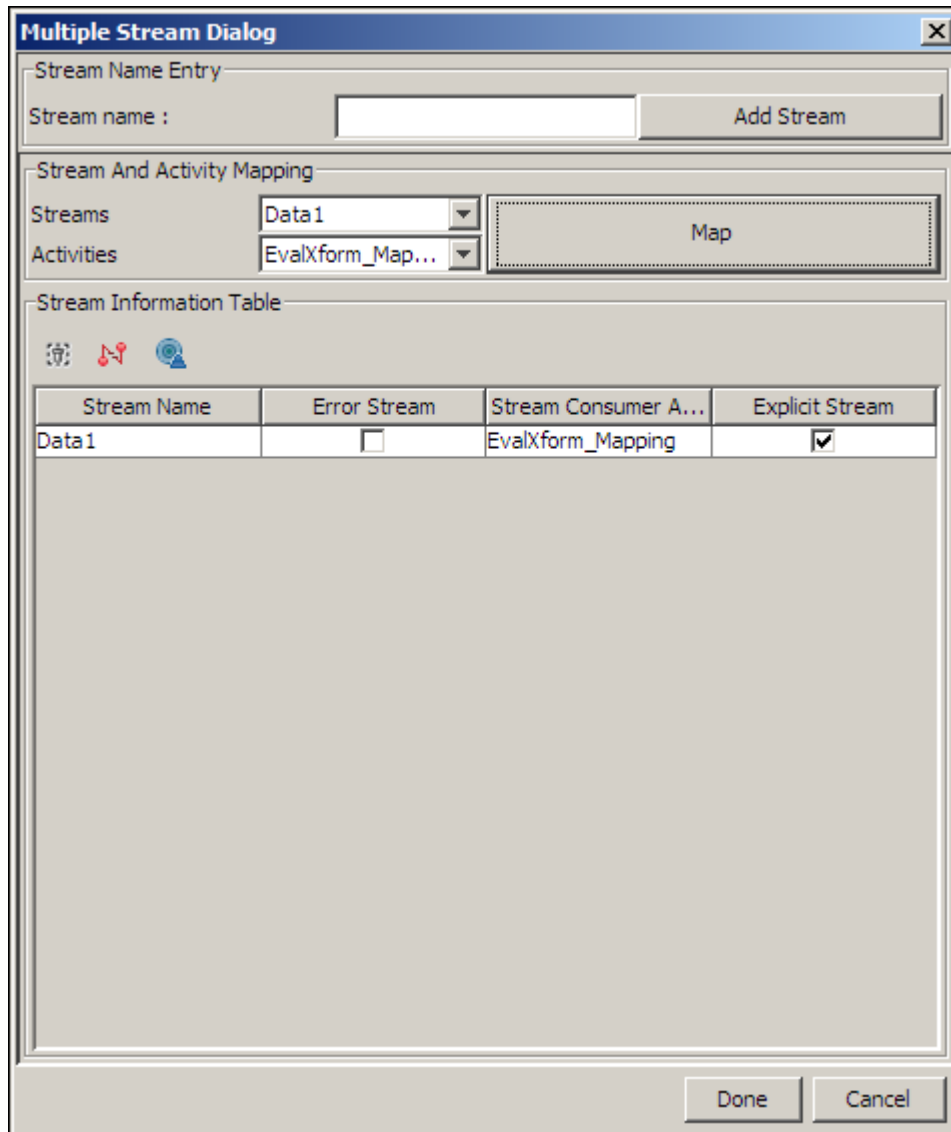
Figure 137: Stream Created

> ℹ️ If you are creating an error stream select the **Error Stream** checkbox.

6. Repeat steps 4 to 6 to create another stream.

7. Click **Done** to return to the Graph Canvas. The created streams are displayed in the Graph canvas by data objects Artifact (see Figure 138).
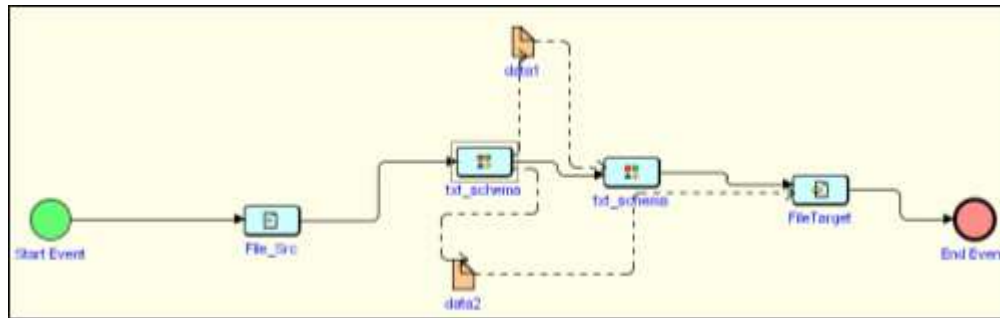
Figure 138: Showing Multiple Streams in Process Flow

> **i** The Artifacts are only to show the flow of streams therefore it is necessary to add the activities with appropriate flows. If user deletes a stream from the Multiple Stream Dialog box, then the corresponding Artifacts are also deleted. If an Artifact representing a stream is deleted then the stream is also deleted. Process Designer asks user if he/she wants to delete the underlying stream.
>
> To hide the Artifacts, click **View** in the menu bar and deselect the *Show Artifacts and Associations* option.

The Multiple Stream feature can be used in three scenarios:

Creating more than one Stream

When data from one stream is sent to more than one activity, you can create more than one stream. However, more than one stream can be created only with the selected activities. These activities are Mapping Transformation, Scripted Service, Repeater Service, XML Validator and Decoder.

> **i** A Mapping activity does not always generate multiple streams. It is based on the schemas used in the mapping activity.

Creating Error Stream

If a source or target schema is not compliant with the corresponding source or target data, then the process flow execution will generate error records. Sometimes these error records are useful for users and user may want to store them for debugging. In such a case, error stream is created along with data stream. This error stream can be mapped to some other activity for further processing. For example, user may want to store the error records in a File Target. To specify a stream as an error stream, check the *Error Stream* checkbox in the Multiple Stream Dialog Box. Error stream can be generated for Schema, Database source, Database target, Advanced Database target and XML Validator only.

Creating Default Stream

Sometimes an action, for example the Delay action, is used between two activities. In such type of situation data from the first activity does not pass to another activity because the action Delay does not consume data from the first activity and hence cannot pass it to another. To avoid this condition default stream is used.

Steps to create a default stream

1. Right click the first activity and select **Multiple Stream**. The Multiple Stream dialog box appears (refer to Figure 135).

2. Delete the existing stream.

3. Select another activity from the **Activities** dropdown list.

4. Click **Default Stream** ( ) button and then click **Map** button (see Figure 135).

5. Ensure that the **Explicit Stream** checkbox is checked.
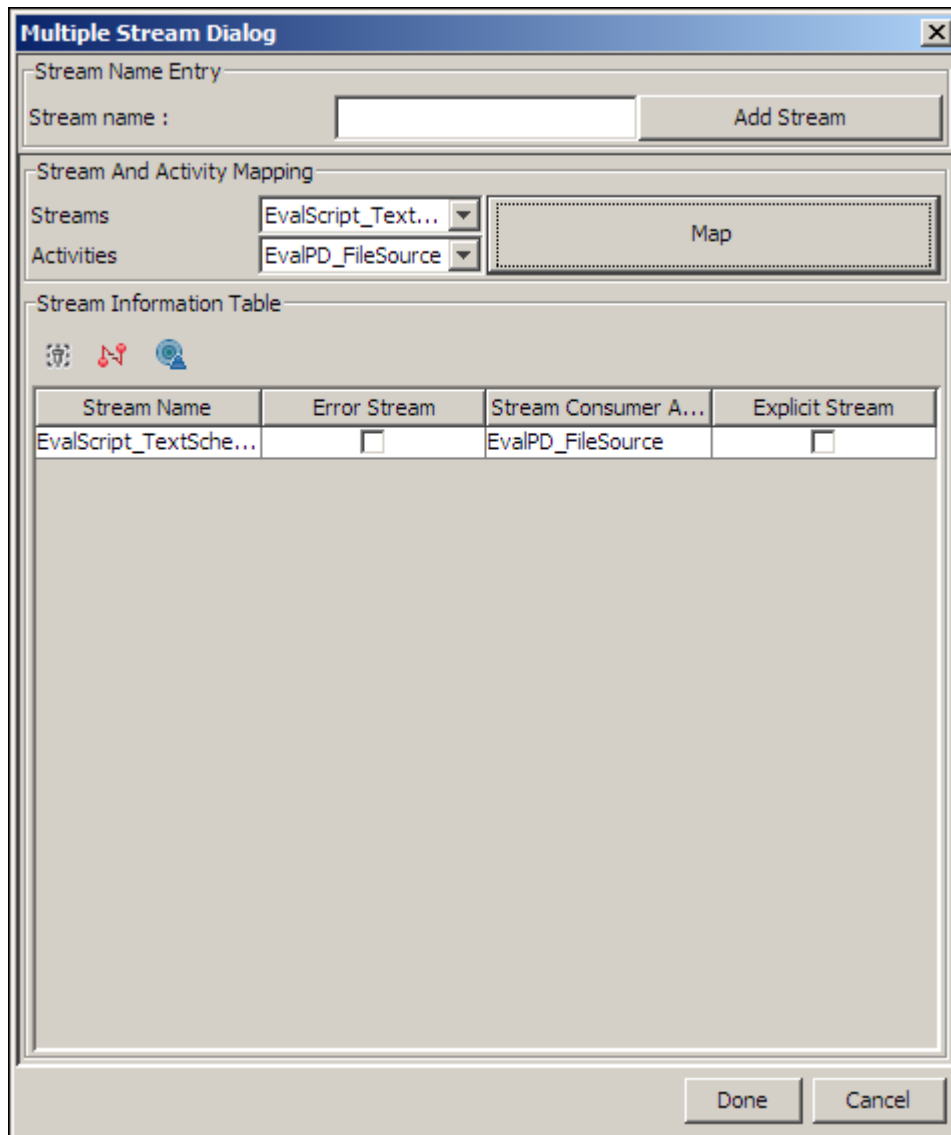
Figure 139: Creating Default Stream

8. Click **Done** button to save the stream and return to *Process Designer* screen.

> If you map a stream from a source activity to multiple activities (for example, Schema or Target activities) using the Multiple Stream option, only one target activity can get the stream from the source activity. The other target activities do not get the stream from the source activity and thus get aborted. This in turn aborts the process flow. It will only work if a

gateway element is used in a process flow. This element will include a condition, on the basis of which one target activity can be selected at runtime. Another way is to use a Repeater Node to pass the stream to more than one activity. For details on using a Repeater Node, refer to the [Using Repeater Node](#) section.

HANDLING ERROR RECORDS

Adeptia Suite provides you following options to handle the error records. You can handle error records by either:

- Saving the error records into a repository file.
- Ignoring the error records.
- Further processing the error records (e.g. by saving error records in a File Target).
- Aborting the Process Flow.

For a schema activity, the property **Error Record**, which is a drop-down list, has the following four options:

- **File**: This is the default option. When this option is selected, all the correct records are processed by the schema activity and all the error records are saved in an XML file. To enable you to easily work and locate with the error records file, Adeptia Suite uses the following naming convention for this file:

  ErrorRecord<name of the Schema Activity>.xml.

  This XML file is saved within the folder where the respective process flow repository is created. To know the path of repository folder, refer to the **Repository** section. You can also view this repository file from the Process Flow Logs. To view the process flow log, go to **History > Process Flow Log**. Select the required process and click the **Details** link and then click the Repository link.

- **Ignore**: When you select this option, on execution of the process flow, Adeptia Server ignores the error records, processes the correct records and successfully executes the process flow for the Schema activity.

- **Process**: When you select this option, the error records are processed as defined by you. For example, you can save the error records in a folder using File Target activity or you can send the error records to someone using a mail notification activity.

- **Abort**: When this option is selected, on encounter with the very first error record, execution of the process flow is immediately aborted and the process flow is not executed.

Steps to handle the error records when you want to process them:

To understand the same, consider a scenario where you have a process flow to concatenate employee records. You have a text schema that is mapped to an excel schema. While mapping, you want the error records to be saved in a different File Target activity. Therefore, you want to create an error stream. Perform the following steps to handle the error records:

1. In the **Process Designer** window, double-click the schema activity for which you want to handle the error records. Properties of the Schema activity are displayed in the **Properties Panel**.

For example, double-click the EvalScript_TextSchema activity or right-click this activity to view its properties (see Figure).
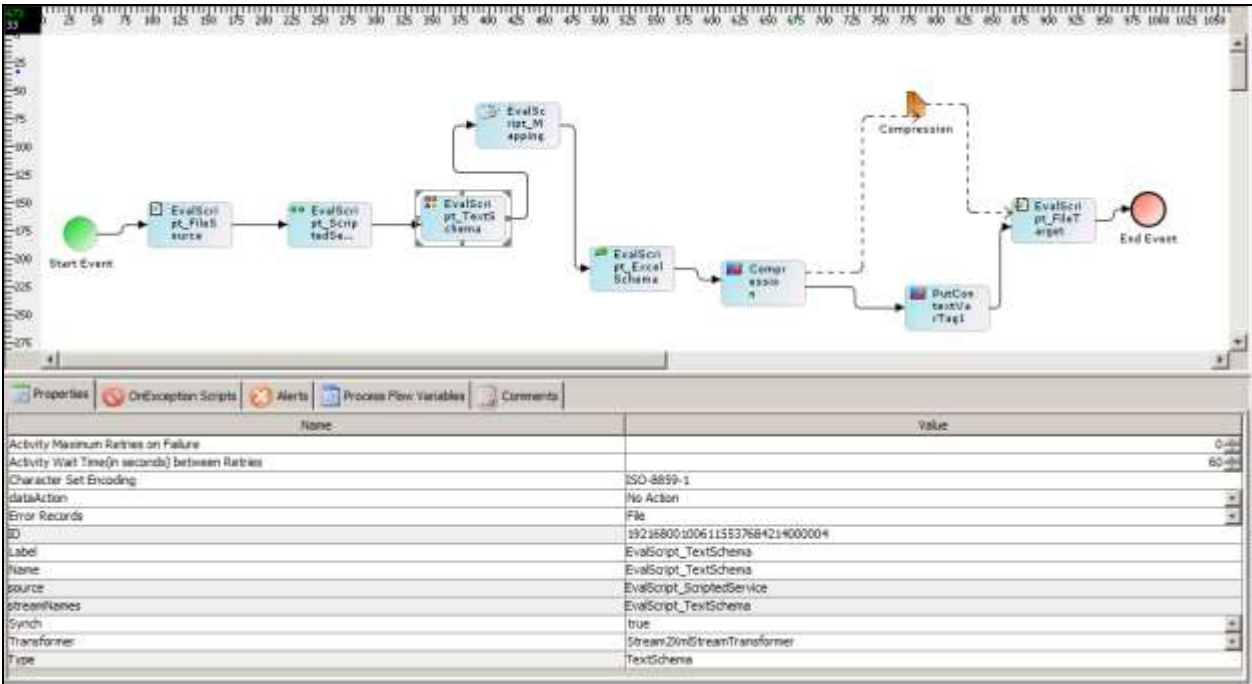
Figure 140: Process Designer

2. In the **Properties** Panel, select **'Process'** from the **Error Record** drop-down list (see Figure).
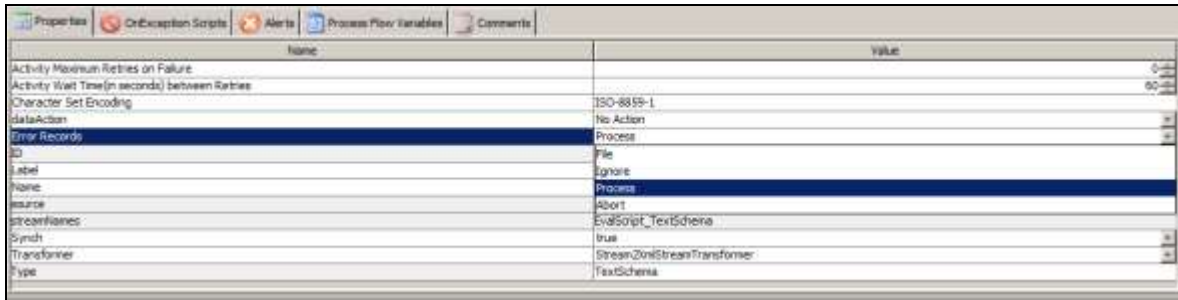
Figure 141: Properties Panel

3. Create a new target activity or drag and drop an existing target activity from the **Repository View** on the Graph Canvas area. This target activity will be used to write the error records in the target file. For example, create a new target activity EvalScript_ErrorRecords.

4. Connect this new target activity with the end event. To connect the same, place the new target activity at the end of this process flow (see Figure).
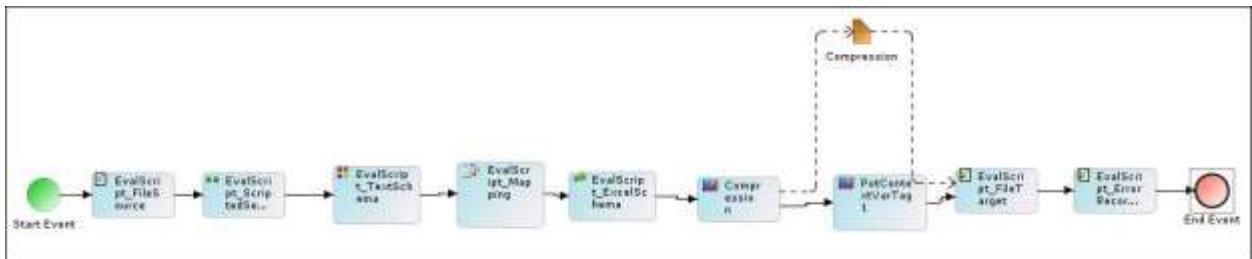
Figure 142: Connecting new target event with the end event

5. Right-click the activity in the Graph Canvas from which error stream is to be generated and then select **Multiple Streams**. The *Multiple Stream Dialog* screen is displayed.

    In the Stream Information Table, the existing stream is displayed. To add an error stream, you need to delete the existing default stream. An application message box is displayed if you do not delete the default stream (see Figure 143).
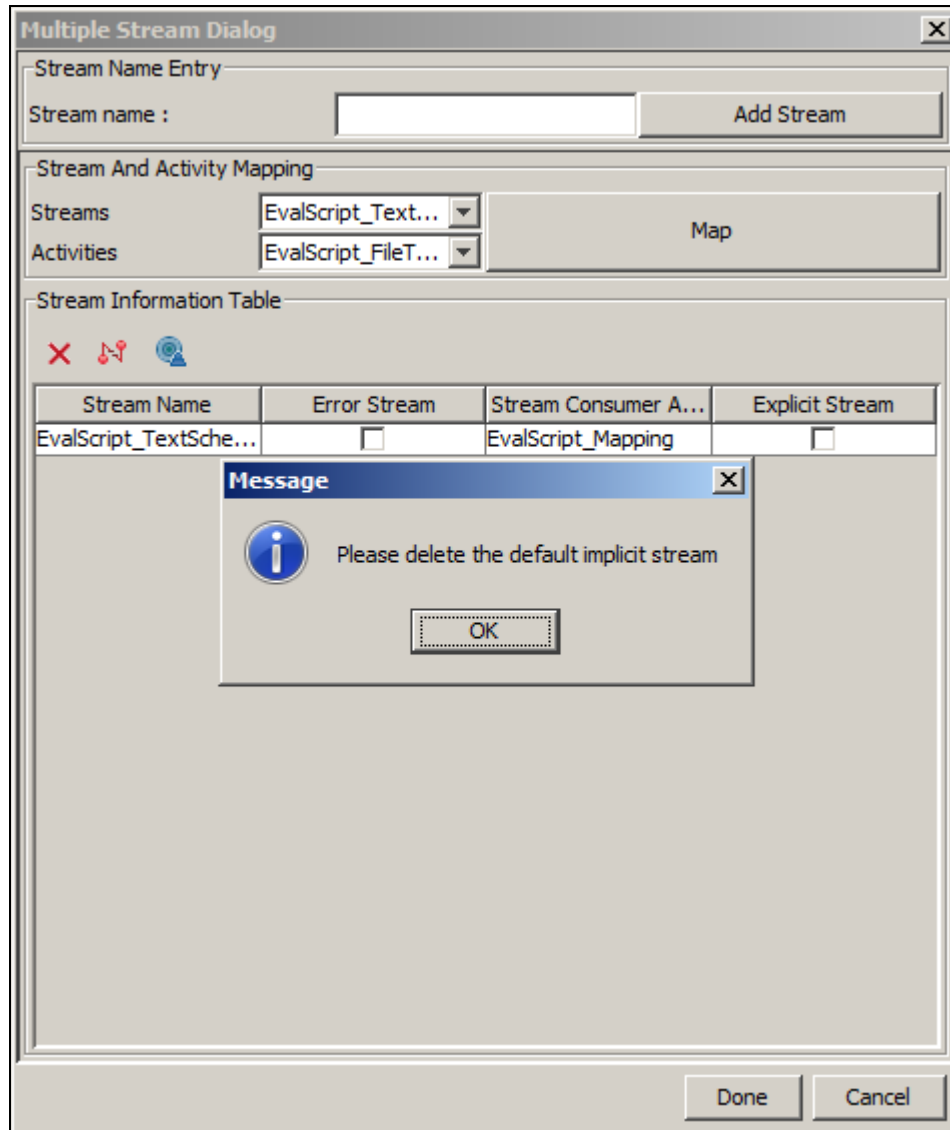
Figure 143: Delete Message for Default Implicit Stream

6. Select the stream to be deleted and then click the **Delete Stream** button. The selected stream is deleted.

7. Enter the name for the new stream in the text box **Stream name** and click the **Add Stream** button. For example, enter the name **Data**. This stream will be used to record all the correct records.

8. Select the Mapping activity, which was earlier connected to this schema activity from the **Activities** drop-down list. For example, before creating a new target activity, this schema activity was mapped with EvalScript_Mapping.

9. Click the **Map** button. This will create a stream between schema and mapping activity. An entry for this stream will be added in the **Stream Information Table** (see Figure).
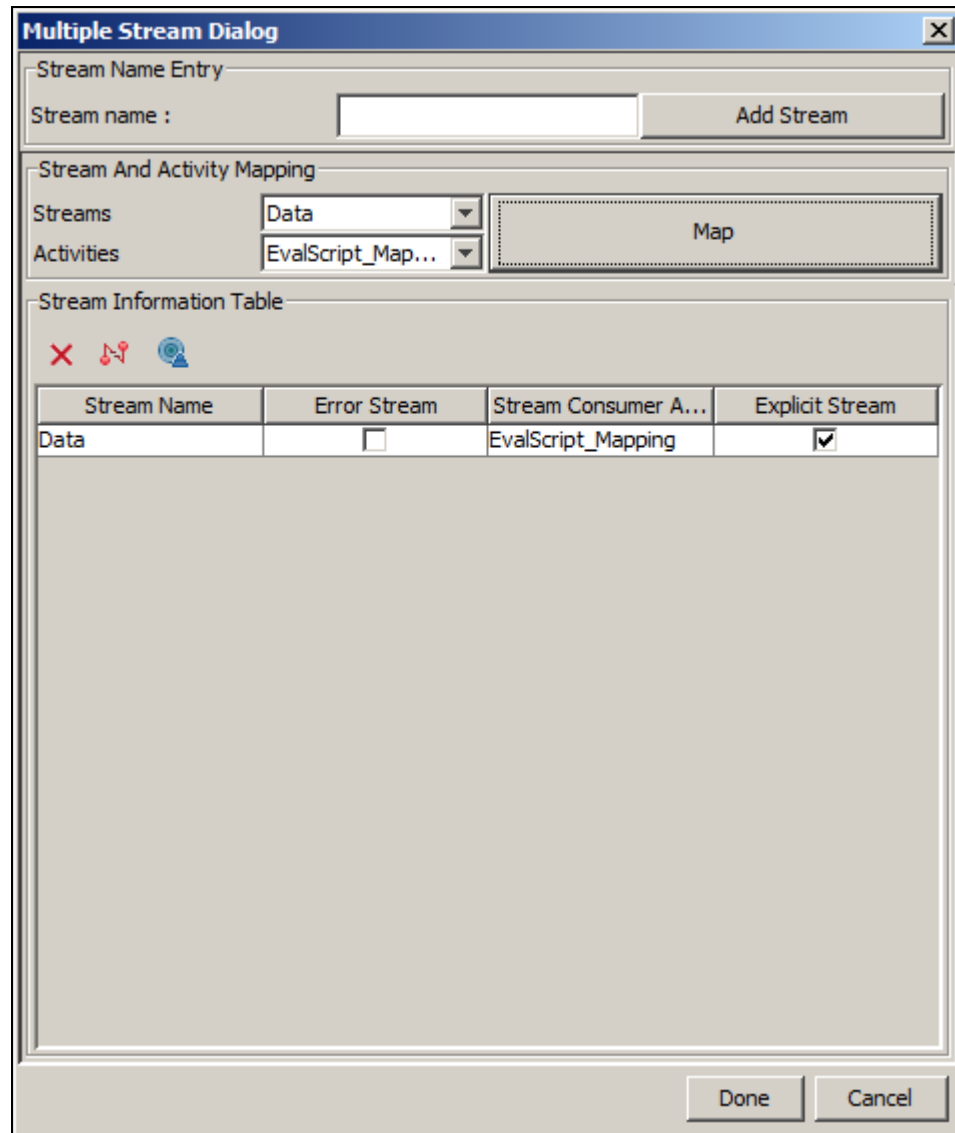
Figure 144: Multiple Stream Dialog Box

10. By default, the **Explicit Stream** checkbox is selected.

11. To add an error stream, enter the name for the new stream in the text box **Stream name** and click **Add Stream**. For example, enter the name **ErrorRecord**. This stream will be used to record all the error records.

12. Select the File Target activity, which will be used to write the error record into the file, from the **Activities** drop-down list.

13. Click **Map** to map the error stream with the activity.

14. Select the **Error Stream** checkbox. The Error Stream is created (see Figure).
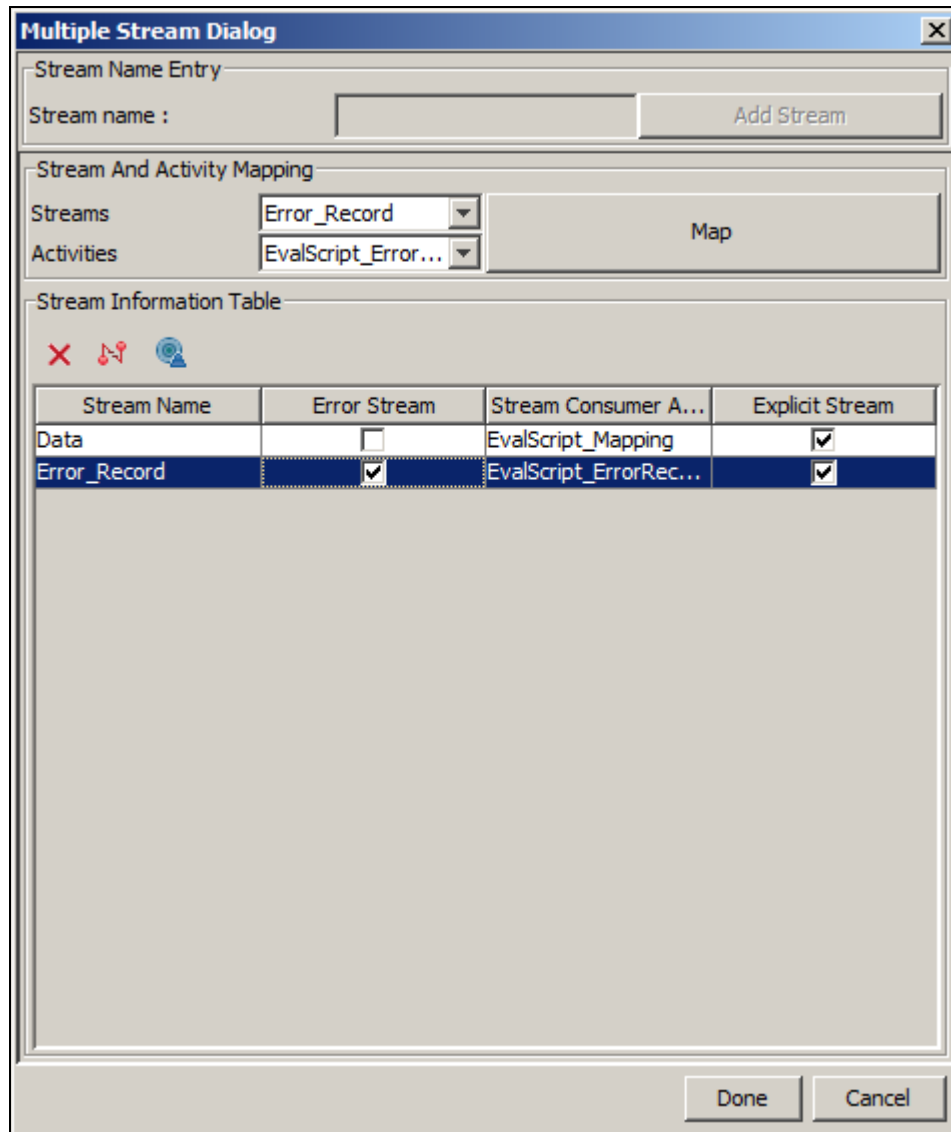
Figure 145: Multiple Stream Dialog Box

9. Click **Done** to return to the Graph Canvas. The created streams are displayed in the Graph canvas by data objects Artifact (see Figure).
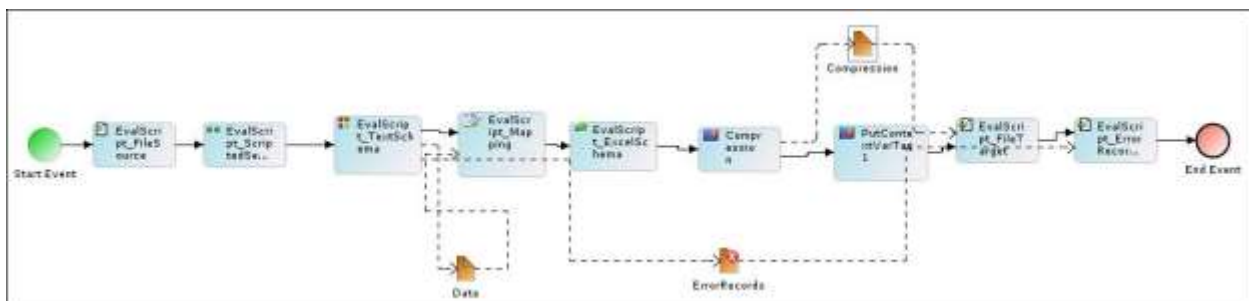
Figure 146: Showing Error Stream in Process Flow

> **i** On execution of this process flow, the following error record file will be created in the Repository folder:
>
> ErrorRecordEvalScript_TextSchema.xml

USING STREAM SELECTOR

When more than one input stream is connected to an activity, Stream Selector is used to specify the input stream to be consumed by the activity. To understand the use of Stream Selector consider the following scenario (see Figure 147).
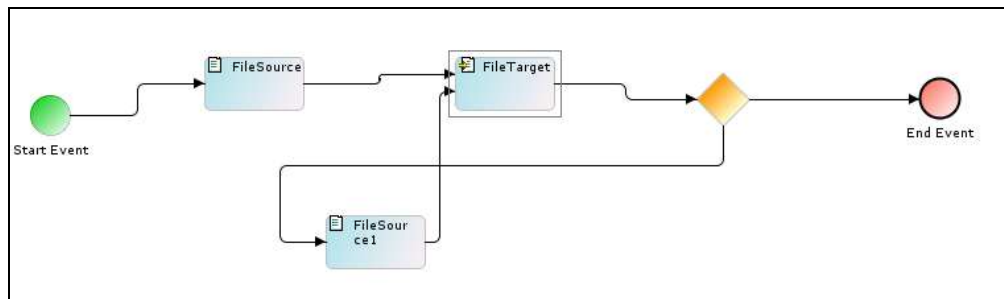
Figure 147: Scenario

In this process flow, you can see that two input streams are passed to the File Target. The desirable execution sequence is that first *File Source* will be executed then *File Target* and there after the *Gateway*. Now, if the condition specified at the *Gateway* is satisfied, the process flow will be finished. If the condition specified at *Gateway* is not satisfied, the control will be passed to the *File Source1* and further to *File Target*. Practically, when this process flow will be executed, the *File Target* activity will get confused whether to take input from *File Source* or from *File Source1*. Thus, this process flow will fail.

To avoid such a situation, **Stream Selector** is used. Streams from *File Source* and *File Source1* are passed to Stream Selector and then from Stream Selector to the *File Target*. The use of Stream Selector is displayed in Figure 148.
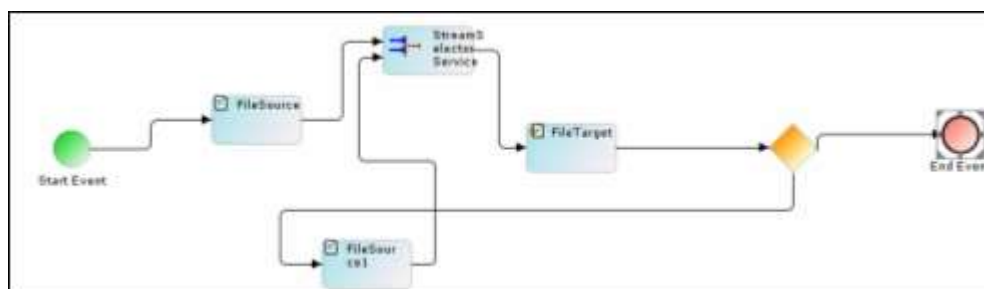
Figure 148: Stream Selector

Stream Selector takes input from the activity, which has just executed. If *File Source* has executed before the execution of stream selector, it will take input from *File Source*. If *File Source1* has just executed, it will take input from *File Source1*.

Steps to use a Stream Selector

1. Click hierarchy structure in the **Repository View** panel. Expand the **Activities** list of the Adeptia Server and select **Selector**. A list of selector activities is displayed.

2. Click **Stream Selector Service** and drag it to the Graph Canvas. The Stream Selector Service node is displayed in the Graph Canvas area (see Figure 149).
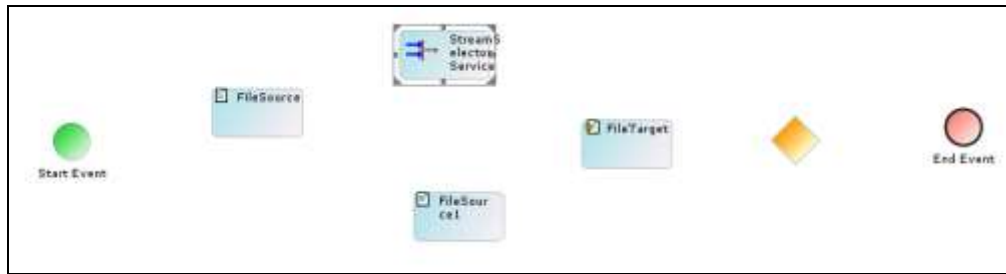
Figure 149: Drag Stream Selector to Graph Canvas

3. Connect the required activities with the Stream Selector Service node (see Figure 150).
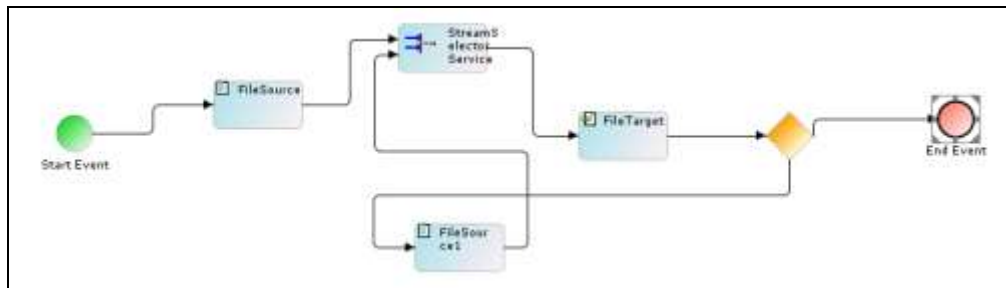
Figure 150: Connect Activities with Stream Selector Node

USING REPEATER NODE

Repeater node is used when output of one activity is sent to more than one activity. For example, data from a file source is sent to two File Targets.

Steps to use a Repeater Node

1. Click hierarchy structure in the **Repository View** panel. Expand the **Activities** list of the Adeptia Server and select the **Repeater Node**. A list of repeater node activities is displayed.

2. Select the **Repeater Service** under Repeater Node and drag it to the Graph Canvas. A Repeater Service node is displayed in the graph canvas (see Figure 151).

Figure 151: Repeater Service Node

3. Connect all activities with appropriate control flows in the Graph Canvas (see Figure 152).
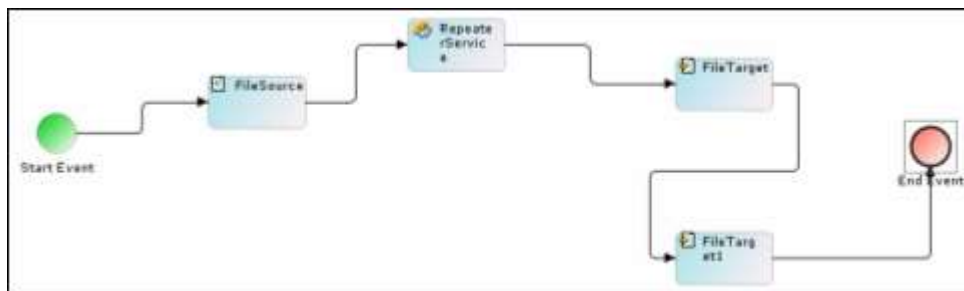
Figure 152: Connect Activities

> The Figure 152 displayed above does not illustrate the data flow. It is showing the sequence in which activities will be executed. This should be noted that File Target and File Target1 activities must not be connected with Repeater Service in parallel to each other.
>
> Now to specify data flow, multiple streams must be created with Repeater Service.

4. To create multiple streams, right click **Repeater Service** and select **Multiple Stream**. The **Multiple Stream Dialog Box** is displayed.

5. Enter number of streams in the **Enter Stream Count** field and click **Add Stream** button. Since we have two outputs from repeater node, enter 2 in the **Enter Stream Count** field.

6. Select 1 from the *Stream* dropdown list and select the first activity, which will consume the stream from the *Repeater Node*, from the **Activities** dropdown list.

7. Click **Map** button. The stream created is displayed in the *Stream Information Table*.

8. To create second stream, select 2 from the *Stream* dropdown list and select another activity, which will consume another stream from *Repeater Node* from **Activities** dropdown list.

9. Click the **Map** button. The second stream is displayed in the *Stream Information Table* (see Figure 153).
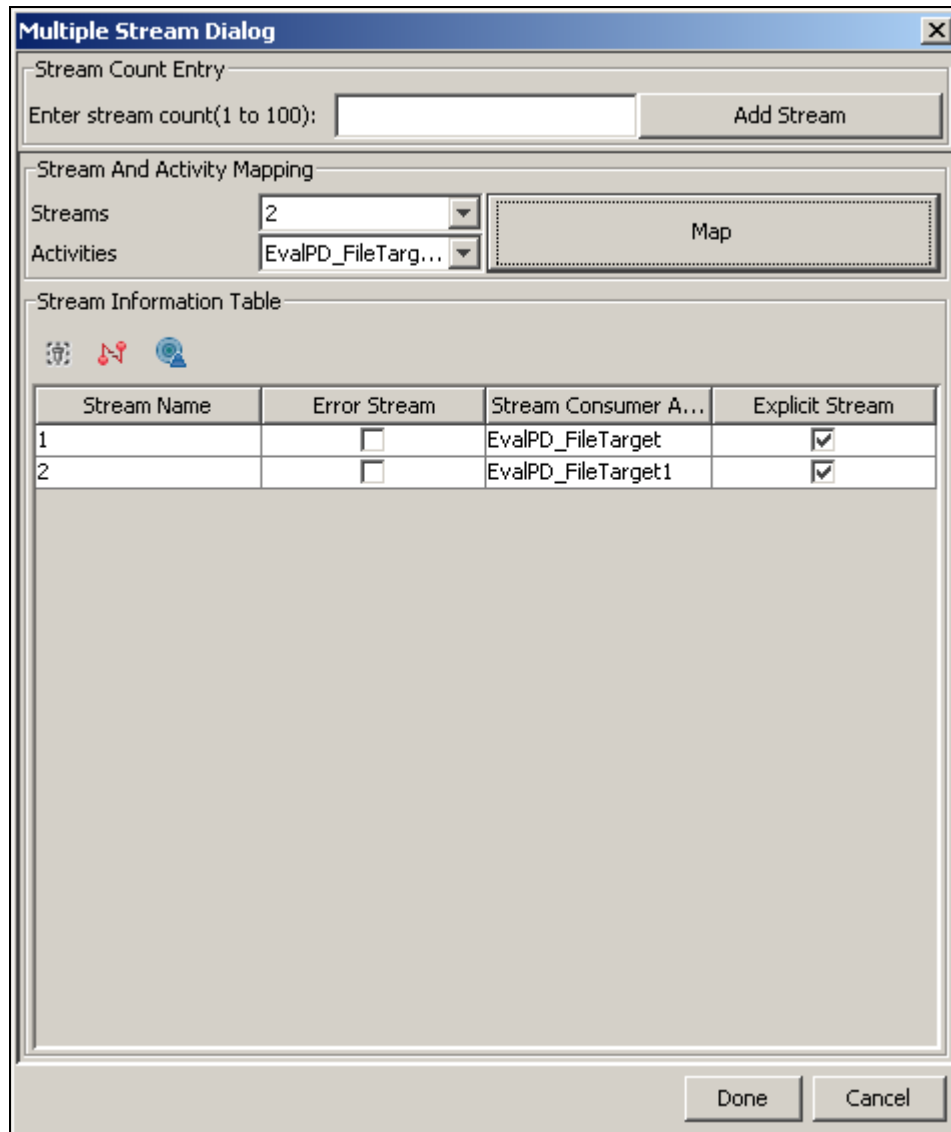
Figure 153: Create Second Stream

10. Click **Done** to save the streams created and return to the Graph Canvas. The created streams are displayed in the Graph Canvas by Artifact (see Figure 154).
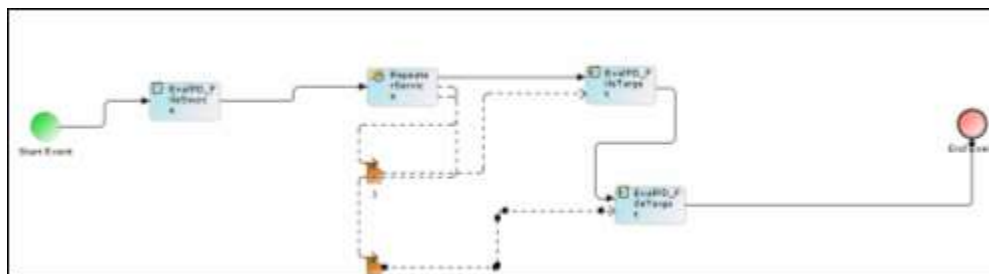
Figure 154: Repeater Node with Multiple Stream

USING STREAM CONSUMER

Stream consumer activity is used to consume the stream. Sometime there could be possibility that some streams are not being consumed by any other activity. In that case unconsumed stream can cause problem. So it is always recommended makes sure that all the streams are properly consumed. You can use Stream Consumer activity to consume stream which are not being consumed by any other activity.

Steps to use Stream Consumer activity

1. Click hierarchy structure in the **Repository View** panel. Expand the **Activities** list. List of activity types are displayed.

2. Expand the **Target** activities. List of target activities are displayed (Figure 155).
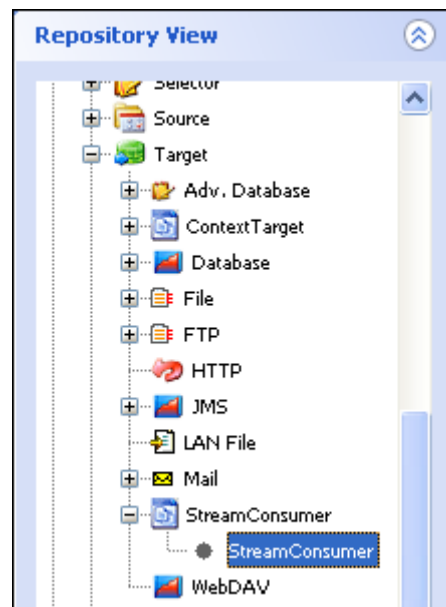
Figure 155: Stream Consumer activity

3. Select the Stream Consumer activity and drag it to the graph canvas area.

4. Connect the unconsumed stream to this activity.

USING ERROR INTERMEDIATE EVENT

Error Intermediate Event is used to redirect Process Flow execution to an alternate path in case of failure of any activity during process flow execution. To understand the use of Error Intermediate Event consider the following scenario:
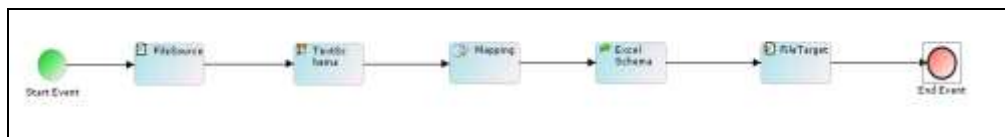
Figure 156: Scenario

In this process flow, data from a text file is converted to an excel file using schema and mapping activities. Now if the Mapping activity is critical for your business, you may want be notified, if mapping activity fails during process flow execution.

To handle this situation you can attach **Error Intermediate Event** with mapping activity so that, in case mapping activity fails, a notification activity is executed and sends an email to the specified email address. Use of Error Intermediate Event is displayed in the Figure 157
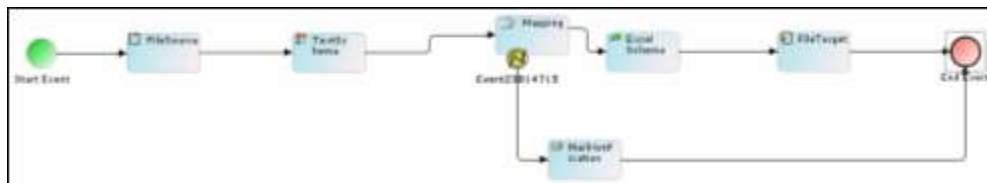
Figure 157: Use Error Intermediate Event

Steps to use Error Intermediate Event

1. Right-click the activity with which you want to attach the intermediate event and select **Add Intermediate Event** option (see Figure 158).
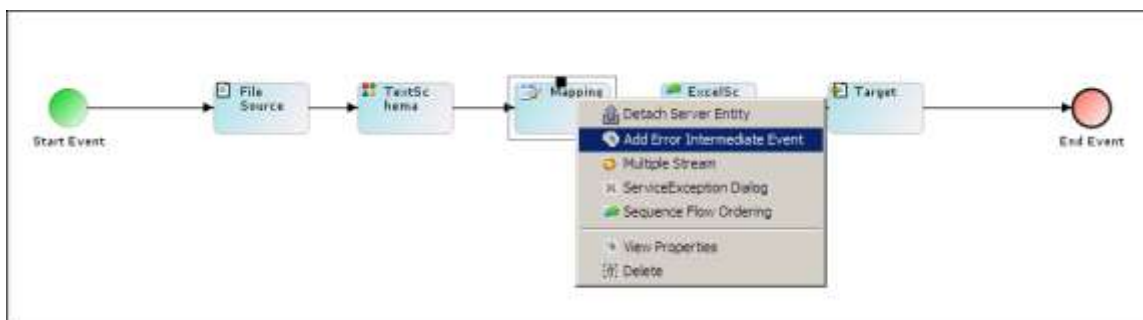
Figure 158: Select Add Intermediate Event

2. This attaches the Intermediate Event to the selected activity (see Figure 159).
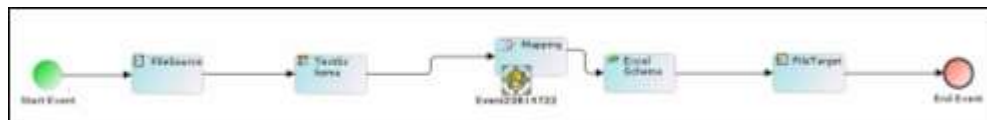
Figure 159: Error Immediate Event Attached

3. Drag another activity, which needs to be executed in case of failure of Mapping activity, to the Graph Canvas Area (see Figure 160).
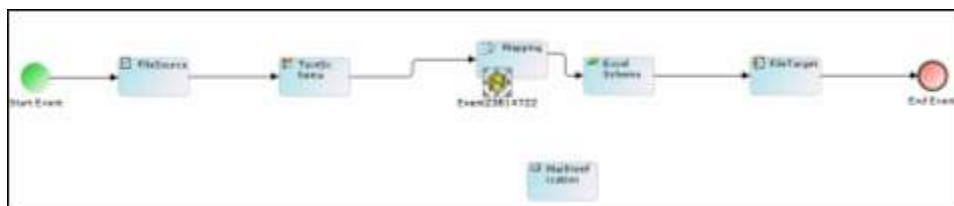
Figure 160: Drag Another Activity

4. Connect the Error Intermediate Event to Mail Notification activity and then Mail Notification activity to End Event (see Figure 161).
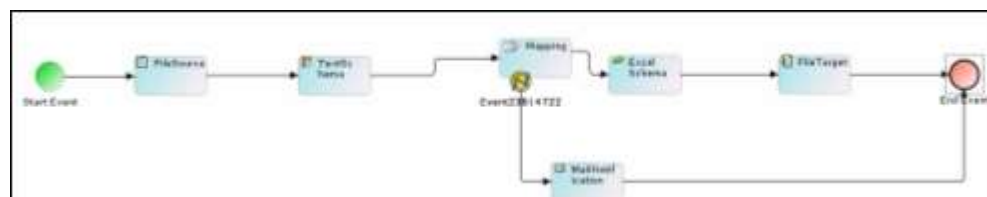
Figure 161: Connect Activities

While connecting Error Intermediate Event with Mail Notification activity, please ensure that you are connecting Error Event with Mail Notification not the Mapping activity with Mail Notification.

CREATING EXCEPTION HANDLER SCRIPT

Exception Handler scripts are basically Java code, which is invoked, if any exception or error occurred during execution of a process flow. There are three types of Exception Handler Scripts:

- Service Exception
- Process Flow Exception
- Invalid Data Exception

These Exception Handler Scripts can be created at a global level (for all the activities in the Process Flow) or at the activity level (for a specific activity). If an exception or errors during the execution of a process flow, the activity level exception handler script is invoked first. If the activity level exception handler script is not created for that activity, then only the global level exception handler script is invoked.

These Exception Handlers are invoked at different stages of the process flow. These are depicted in the table below.

Table 24: Exception Handlers in a Process Flow

Exception	Description
Service Exception	This exception handler script is invoked when any error related service (activity) occurs. For example: File not found, Stream closed etc.
Process Flow Exception	This exception handler script is invoked when any error occurs at Process Flow level. The Exception can only be declared at global level. For example: JMX not found, Repository not found etc.
Invalid Data Exception	This exception handler script is invoked when any error related to processing of data occurs. For example: Incorrect record format etc.

Creating Global Exception Handler Script

Steps to create a Process Flow (Global) Exception Handler Script

1. Click on the **On Exception Scripts** tab ( ) in the Bottom Pane. The **Create Exception Handler** screen is displayed (see Figure 162).
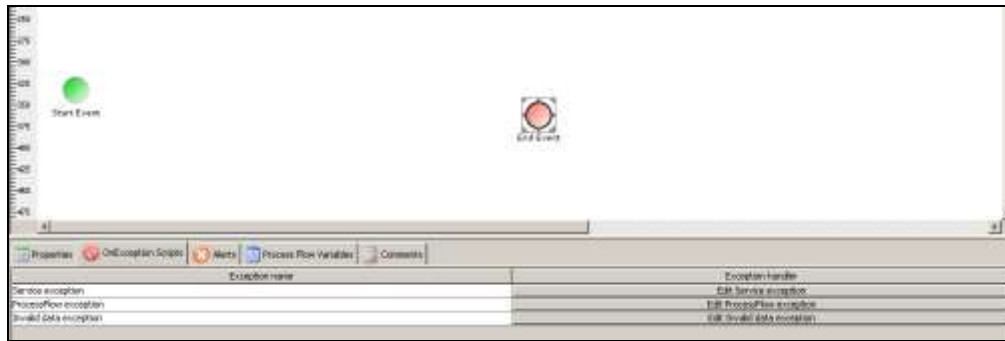
Figure 162: Creating Exception Handler Script

2. Click **Edit Service Exception**. The **Service Exception Dialog** window is displayed (see Figure 163).
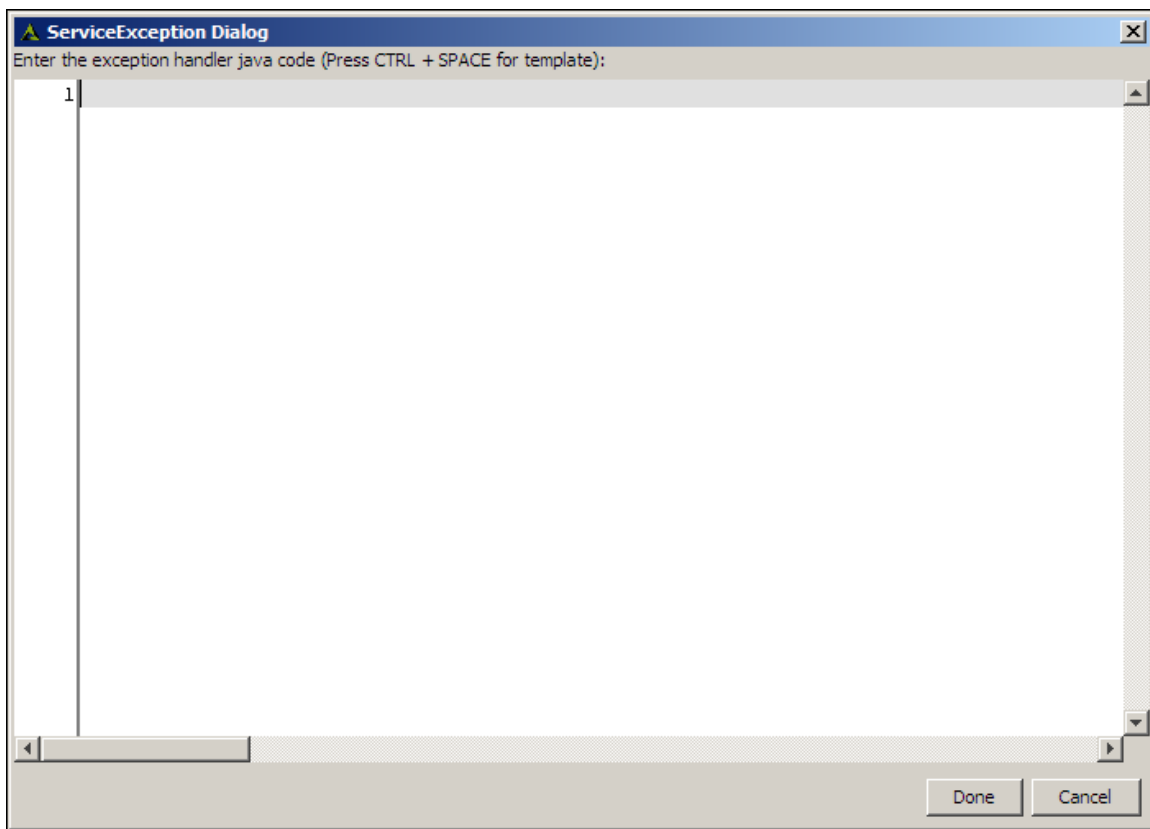
Figure 163: Service Exception Dialog Box

> **i** You can use **<CTRL>+<Space Bar>** to view pre-defined template of Java Code, which can be used in creating Java Condition. You can select any of them and edit it according to your requirement.
>
> If you want to create the process Flow Exception Handler or Invalid Data Handler script, click **Edit Process Flow Exception** or **Edit Invalid Data Exception** buttons respectively.

3. Enter the Java code in the **Service Exception** dialog box and click **Done** button.

Creating Activity Exception Handler Script

Steps to create an Activity Exception Handler Script

1. Right-click the activity in the Graph Canvas and select **Service Exception Dialog**. The Service Exception Dialog Box is displayed (see Figure 163).

2. Enter the Java code in the **Service Exception** field and click **Done** button.

> ℹ️ You can use **<CTRL>+<Space Bar>** to view examples of Java Condition. **<CTRL>+<Space Bar>** show lists of example. You can select any of them and edit it according to your requirement.
>
> If you want to create Invalid Data Handler script, right-click the activity and select **Invalid Data Exception Dialog**.

USING COMPRESSION/DECOMPRESSION

Compression is used to compress any file into ZIP file. Similarly, Decompression is used to extract file from a ZIP file. This feature supports Compression or Decompression of only one file.

Steps to use Compression/Decompression

1. Drag the required file source activity in the Graph Canvas area.

2. Click hierarchy structure in the **Repository View** panel. Expand the **Activities** list of the Adeptia Server and select **Compression Service**. A list of compression service activities is displayed.

3. Select **Compression** and drag it to the Graph Canvas area (see Figure 164).
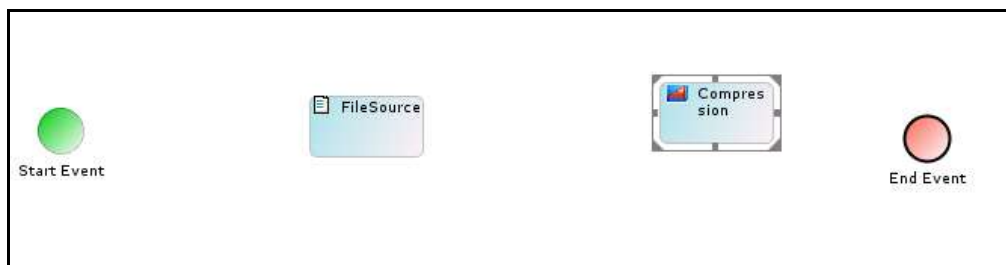
Figure 164: Drag Compression Activity

4. Drag the required target activity to the Graph Canvas area.

5. Connect all activities in Graph Canvas with **Unconditional Control flow** as displayed in Figure 165.
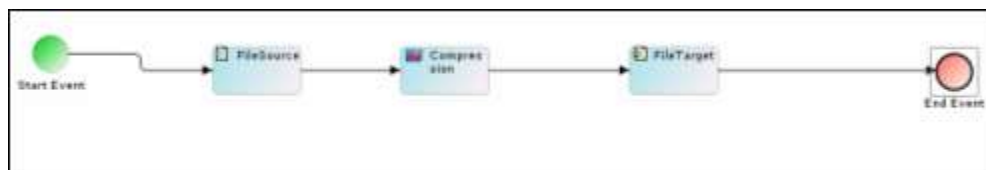
Figure 165: Connect Activities

6. Right-click the **Compression** activity and select **View Properties**. Properties of the Compression activity are displayed in the Properties Panel (see Figure 166).
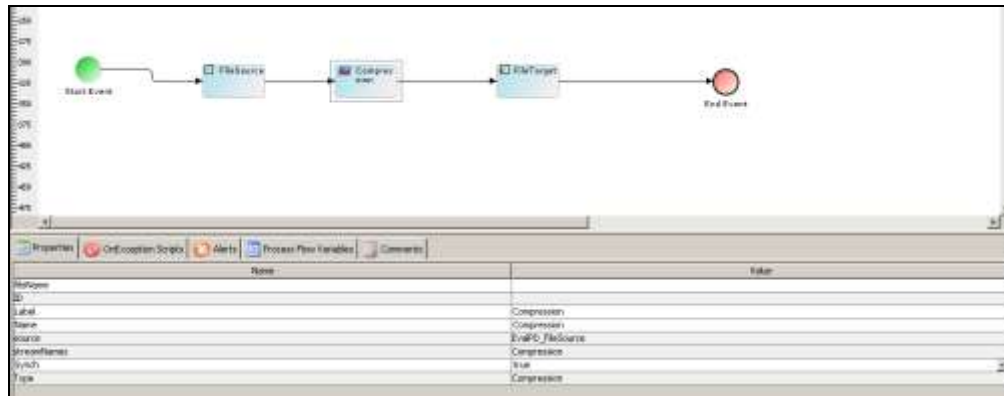
Figure 166: Compression Activity Properties

7. Enter **$$Service.<SourceActivityName>.fileName$$** as value in the *fileName* field to override the file name while compression.

> ℹ️ Alternatively, you can enter the name of the file in the *fileName* field. In this case, the file inside the zip will be of the name given in Compression activity. Name specified in the File Target activity will be the name of the compressed target file.

8. Similarly, you can use Decompression feature.

> ℹ️ While Decompressing, you have to use put-context-var before the target activity and enter **$$Service.<DecompressionActivityName>.fileName$$** as value to override the *fileName* variable of target activity.

USING CUSTOM REPORT IN PROCESS FLOW

A custom report is used to send generated report (in PDF or HTML formats) to a file based target (in PDF or HTML formats).
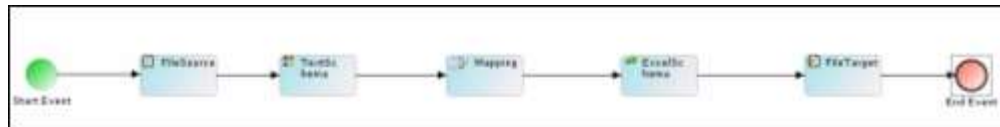
Figure 167: Scenario

In this process flow, data from a text file is converted to an excel file using the schema and mapping activities. The data generated in the excel file is converted to PDF/HTML format using a custom report and sent to a File Target.

Steps to use a Custom Report

1. Click hierarchy structure in the **Repository View** panel. Expand the **Activities** list of the Adeptia Server and select **Reports**. A list of reports is displayed.

2. Select the **Custom Report** and expand it to view the custom reports. Select the desired custom report and drag it to the Graph Canvas. The Custom Report node is displayed in the graph canvas (see Figure 168).

Figure 168: Custom Report Node

3. Connect all activities with appropriate control flows in the Graph Canvas as displayed below (see Figure 169).
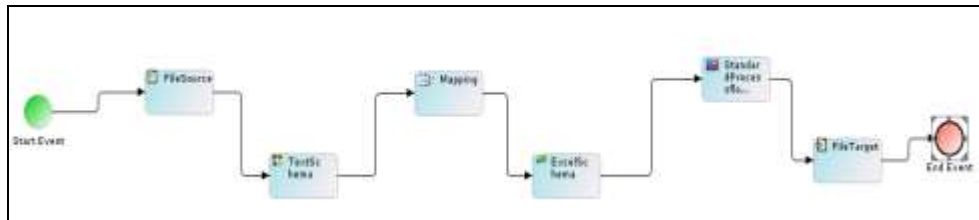
Figure 169: Connect Activities

4. Executing this process flow will send generated report to the File Target.

ATTACHING MAIL NOTIFICATION TO A PROCESS FLOW

You can attach a mail notification activity with the end event of a process flow. Mail notification is used to send e-mail to appropriate users at the certain point in process flow.

Prerequisites

- Mail notification activity must be created before attaching it to a process flow.

> To know how to create the mail notification activity, refer to the Creating Mail Notification Activity section

Steps to Attach a Mail Notification at the end of Process Flow

1. In the Graph Canvas, right-click at the **End Event** and then select the **View Properties**. The properties of the End Event are displayed in the Properties Panel (see Figure 170).

Figure 170: Attaching End Process

2. Click *in the Attach Notification Value* column and select **True** from the dropdown list. The **Select Notification** screen is displayed with list of mail notification activities (see Figure 171).
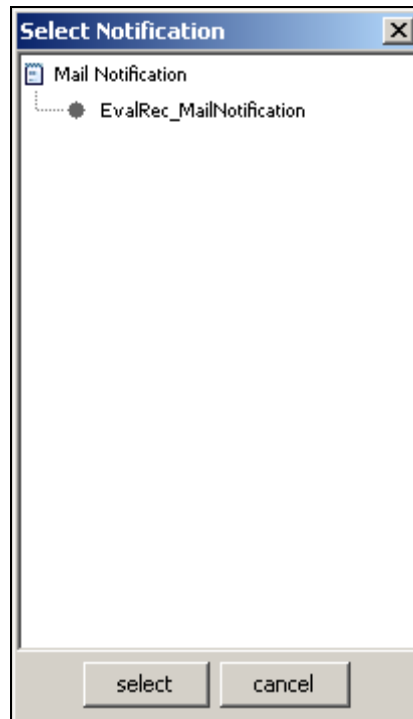
Figure 171: Selecting Mail Notification

3. Select the required mail notification activity and click **Select** button. The selected mail notification activity is attached at the end of the process flow.

GENERATING PDF FILE OF PROCESS FLOW

The process flow information can be saved into a PDF file for documentation purposes. There are three types of PDF files that can be generated from Process Designer.

- **Graph PDF:** Graph PDF only contains the screen shot of the Process Flow created in Graph Canvas area.
- **Summary PDF:** Summary PDF contains activity details of the Process Flow. It is implemented only for mapping and schema.
- **Entire Flow PDF:** Entire Flow PDF contains information regarding each and every activities of the Process Flow. List of information contained in the Entire Flow PDF is as below.

Process Flow Details

- Process Flow Name
- Process Flow ID
- Process Flow Description
- Creation Date
- Modification Date
- Debug Level
- Group Owner

Process Variable Details

- Key or Name of the Variable
- Initial Value
- Type (Global or Activity)
- Activity Name (If the Type is activity)
- Activity Label used in Process Designer
- Activity Type

Graph Canvas Entity

- Name
- Description
- User Owner
- Group Owner
- Creation Date
- Modification Date
- Permission
- Comment
- Label
- Inbound Connecting Objects
- Outbound Connecting Objects
- Activity Specific Information

For example, path of the source file in case of File Source activity, information of fields in case of Schema Activity or mapxmlfile in case of Mapping Activity.

Process Flow Graph

Steps to generate a PDF file of a Process Flow

1. In Process Designer, click **Generate PDF** ( ) button. The **PDF Generation** dialog box is displayed (see Figure 172).
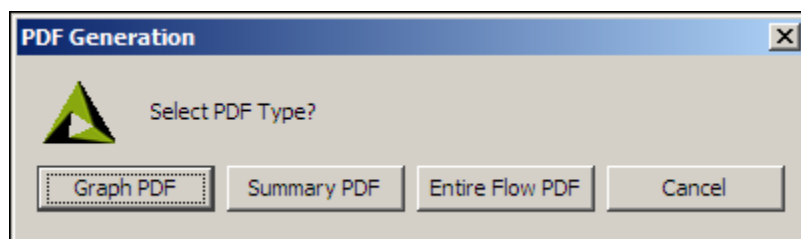
Figure 172: Select PDF Type

2. Select the type of PDF file to be generated. A *Graph PDF* includes all the rules applied on all activities in the process flow. A *Summary PDF* includes only the activity details, and is implemented only on mapping and schema. The *Entire Flow PDF* includes all details of the process flow.

3. The **Save** box appears to select the path, where PDF file will be saved (see Figure 173).
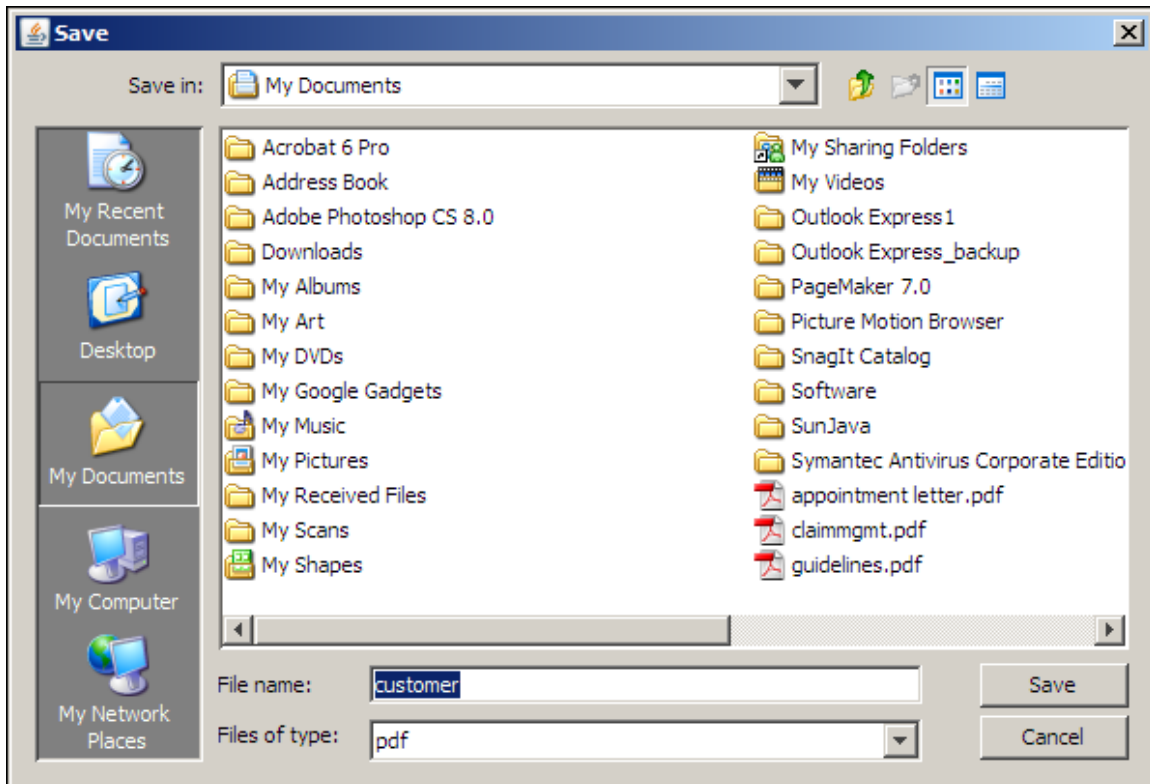
Figure 173: Save Box

4. Select the path and enter the name of the file in the **File Name** field.

5. Click the **Save** button. The generated PDF file is saved in the specified folder.

WORKING WITH PROCESS DESIGNER IN OFFLINE AND ONLINE MODES

The Adeptia Server Process Designer allows user to work in offline mode. A user can design a process flow even if he/she is not connected with the Adeptia Server. At any moment user can switch from Offline mode to Online and vice versa. The Online mode or Offline mode status is displayed in the bottom left side of the Process Designer window.

Steps to switch to the Offline mode

1. Click **Modes** menu and then click **Online** option. The checkmark displayed next to the Online mode is removed and you will be shifted to the Offline mode (see Figure 174).
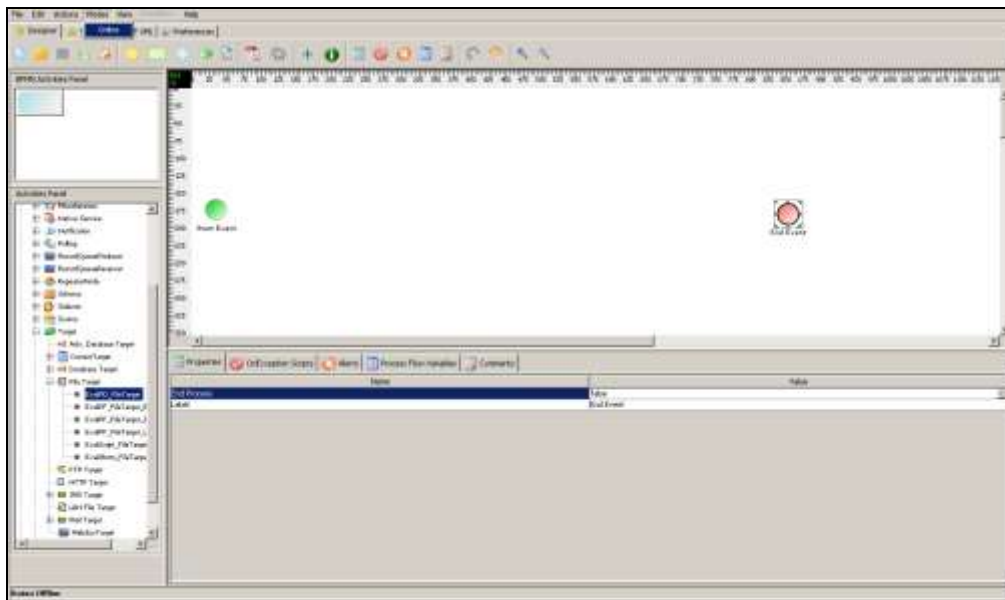
Figure 174: Changing Mode

> While working in the Offline mode, you cannot save the Process Flow on the Adeptia Server. You can save the Process Flow on your local hard disk.
>
> Users working in the Offline mode cannot see objects e.g. activities and process flows etc. that other users create on Adeptia Server. To view those objects, shift to the Online mode. Click the Actions menu and then select Synchronize PD with Adeptia Server.

When switching to Online mode, you need to login again.

Steps to switch to the Online mode

1. Click **Modes** menu and then click **Online** option.

2. Click Actions and select **Enter Login Information**.

   1. The *Process Designer Login* screen is displayed (see Figure 175).

Figure 175: Process Designer Login

3. Enter the User ID and the password in their respective fields and click **Submit**.

4.   The **Save Changes** window is opened.

5.   This activates the online mode for the Process Designer screen. If the user belongs to more than one group, then the **Select Group** screen is displayed (see Figure 176).

Figure 176: Select User Group

> The *Group* dropdown list is populated with only those groups of which the logged in user is a member.

4.   Select the group from the **Group** dropdown list and click **OK**. This activates the online mode for the selected user.

EXECUTING A PROCESS FLOW

Once you have created a process flow, you can execute it, in order to process the data. You can execute a process flow in two ways:

- Manually
- Automatically

Executing a Process Flow Manually

Steps to execute a Process Flow manually

1.   On the Adeptia Suite homepage, go to **Develop > Process** and then click **Process Flow**.

     The **Manage Process Flow** screen is displayed (refer to Figure 65).

2.   Select the **Action** icon adjacent to the required process flow and click the **Execute** option. The **Process Flow Execution** screen is displayed (see Figure 177).
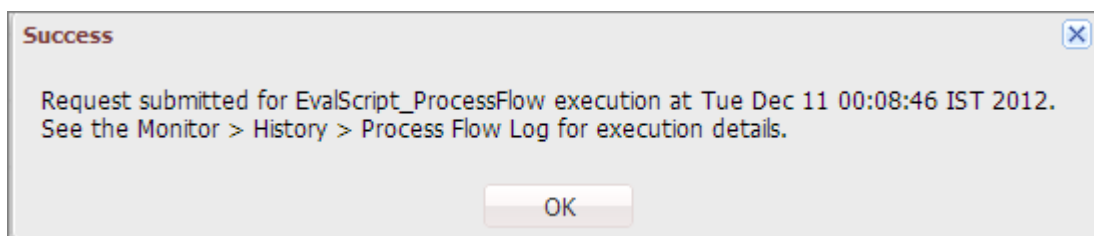
Figure 177: Process Flow Executed

3.   To view the status of execution of the process flow, click the **Monitor** tab.

     Go to **History > Process Flow Logs**. The *Process Flow Log* screen is displayed (see Figure 178).

Figure 178: View Process Flow Log

> ℹ
> - If the process flow is still running you can click *Refresh* to view the updated information of the process flow execution.
> - To view the process flow log of other process flows, click *View Process Log* link. The process flow log page is displayed.
>
> To learn more about Process Flow Log refer to the *Viewing Process Flow Logs* section in the *Business User Guide*.

Executing a Process Flow Automatically

You can execute a process flow automatically based on some events. For example, when you receive an email in your mailbox, the process flow can be executed. For this, you need to bind an event (for example, a mail event) with the process flow. You can either bind an existing event or create a new event and then bind it with a process flow.

Steps to execute a process flow automatically

1. On the Adeptia Suite homepage, go to **Design > Process Flow** and then click **Process Flow**.

   The **Manage Process Flow** screen is displayed (refer to Figure 65).

2. Select the radio button adjacent to the required process flow and click the **BindEvent** link. The **Create Event Registry** screen is displayed.

3. Enter the name and description of the event registry in their respective fields.

4. To bind an existing event to the process flow, select the **Use Existing** radio button, and select the event from the dropdown list. Else, to bind a new event to the process flow, select the **Create New** radio button. Select the event type from the dropdown list, and then click **Create Event** button. This displays the *Create Event* screen for the selected event type.

For example, if you select Mail Event from the dropdown list, then clicking **Create Event** button, displays the *Create Mail Event* screen (see Figure 179).

Figure 179: Create Event Registry

5.   Enter the required parameters and click **Save** in the Create Event screen to save the event activity and bind it to the process flow and return the control to the **Manage Process Flow** screen.

> **i**   For details, on creating an event, refer to <u>Events and Triggers</u> section.

USAGE RECOMMENDATION

Following points should be kept in mind while working in Process Designer:

- User can View or change Process Flow properties from Process Flow Attribute in **Actions** menu.

- While working in Process Designer, user can login with different username or can switch to other Adeptia Server. To login with other username or switch to other Adeptia Server, select Enter Login Information from Actions menu. If you switch to another Adeptia Server, you must have an account to another Adeptia Server and that account must have permission to use Process Designer.

> **i**   For details, on different user types, refer to the *User* section in the *Administrator Guide*.

- Process Designer allows multiple object deletion. More than one activity can be selected by dragging mouse pointer and deleted collectively.

CREATING DATA DICTIONARY

A data dictionary is a collection of record definitions that are commonly used when a schema is created. You can just select the data dictionary and display the required records. This feature avoids redundancy of information and reduces the additional effort for creating a schema. Adeptia supports the Data Dictionary feature for Positional and EDI schemas only. This section explains:

- Creating Positional Data Dictionary
- Creating EDI Data Dictionary

CREATING POSITIONAL DATA DICTIONARY

When creating Positional schemas, some record definitions may be common across schemas. You can create and define the record definitions commonly used in Positional schemas in a Positional Data Dictionary. Thus, when creating a Positional Schema, you can select the data dictionary and display the required records. Later, you can also view or delete a record from the Positional schema screen itself.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a Positional Data Dictionary

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Data Dictionary > Positional**.

   The *Manage Positional Data Dictionary* screen is displayed (see Figure 180).

Figure 180: Manage Positional Data Dictionary

3.   Click the **Create New** link. The *Create Positional Data Dictionary* screen is displayed (see Figure 181).

Figure 181: Create Positional Data Dictionary

4.   Enter the name and description for Positional Data Dictionary in the textboxes **Name** and **Description** respectively.

You need to define records to be stored in the Data Dictionary. You can do this in two ways. These are outlined as:

- Use Definition file
- Define records manually

5.   To define the records using definition file, select the *Use Definition File* radio button, select the type of file from the dropdown list and click the **Browse** button to select the required file.

Alternately, to enter the records manually, click the **Define Records Manually** radio button and click **Add Record** button. This displays the Data Dictionary Record Builder screen (see Figure 182).

Figure 182: Data Dictionary Record Builder

> **i** While defining records manually, the record identifier name should be same as one of the field names. If the record identifier name is not same as the field name then record would not be saved.

6. Enter the name of the Record Identifier in the textbox **Record Identifier Name**.

7. Enter the value of the Record Identifier in the textbox **Record Identifier Value**.

8. Enter the description and version of the record identifier in the textboxes **Description** and **Version** respectively.

9. You can now enter the values in the fields for the record. Enter the name and description of the field in the textboxes **Field Name** and **Description** respectively.

10. Select the type of data from the dropdown list **Type**.

11. If data type is *Date*, select the format of date and time from the **DateFormat** and **TimeFormat** dropdown lists respectively.

12. To define field position select one of the following options:

    - Field Length
    - Start & End Positions

13. To define the field position using field length, select the *Field Length* radio button and enter the length of the field in the *Length* field. Alternately, to define the field position using start and end position, select the **Start and**

End Positions radio button and enter the start and end positions of the field in the *Start* and *End* fields respectively.

> The starting position of a row in a positional file is 1.
>
> In a positional file, tab is counted as one position and not eight positions.
>
> By default, field positions are created in sequence. You can also create a data dictionary with fields that are not in sequence. For details, refer to the Defining Field Positions Non-Sequentially section.

14. Select the alignment of the field from the **Align** dropdown list.

> From *Align* field select:
>
> **L** if the field is left aligned.
>
> **R** if the field is right aligned.
>
> To insert rows, specify the number and position of the rows to be added in the *Number of Rows* and at *Position* fields respectively and click **Add Row** button. A maximum of 99 rows can be added at a time.

15. Select the **Skip** checkbox if you want to skip this field while generating the XML. This selection skips the fields that are not required for the data dictionary.

16. Click **Save** to save the records. The saved records are displayed on the **Create Positional Data Dictionary** screen (see Figure 183). You can view, edit or delete a record from this screen by clicking the appropriate button for that record.

Figure 183: Records created for the Positional Data Dictionary

17. Click **Save** to save the Positional Data Dictionary.

18. Once you save the Data Dictionary, you can view, edit or delete the data dictionary definition by clicking **View**, **Edit** or **Delete** links respectively. Additionally, you can also *print* or *download* the definition.

19. Select the data dictionary in the *Manage Positional Data Dictionary* screen and click **Edit** link. This displays the data dictionary in edit mode (see Figure 184).

Figure 184: Edit Positional Data Dictionary

20. Click the **Print-Friendly Page** button to view the dictionary definition in print mode in the web browser (see Figure 185).

Positional Data Dictionary Name: AL3_PositionalDataDictionary

1) Record Identifier Name = HEADR, Record Identifier Value = 0DDE

FieldName	Description	Type	DateFormat	TimeFormat	StartPos	EndPos	Length	Alignment	Skip
HEADR	Header	string			1	10	10	L	F
DDRFN_01_010	Data Elements Reference Name	string			11	15	5	L	F
DDSTD_02_010	Standard Number	string			16	18	3	L	F
DDVER_03_010	Version Number	string			19	20	2	L	F
DDDFR_04_010	Group Designator First Character	string			21	21	1	L	F
DDDES_05_010	Group Designator	string			22	24	3	L	F
DDSEQ_06_010	Sequence Number	string			25	26	2	L	F
DDLEN_07_010	Length	number			27	29	3	L	F
DDCLS_08_010	Class	string			30	32	3	L	F
DDTYP_09_010	Data Type	string			33	34	2	L	F
DDPRS_10_010	Presence Code	string			35	35	1	L	F
DDELM_11_010	Element Name	string			36	95	60	L	F
DDSTP_12_010	Starting Position	number			96	98	3	L	F
DDGRV_13_010	Group Version Number	string			99	99	1	L	F

Figure 185: Print Positional Data Dictionary Definition

CREATING EDI DATA DICTIONARY

When creating EDI Schemas, some record definitions may be common across schemas. You can create and define the record definitions that are commonly used in EDI schemas in an EDI Data Dictionary. Thus, when creating an EDI Schema, you can select the EDI Data Dictionary and display the required records.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create EDI Data Dictionary

1. On the Adeptia Suite homepage, go to **Configure > Services > Data Dictionary** and then click **EDI**.

   The *Manage EDI Data Dictionary* screen is displayed (see Figure 186).

Figure 186: Manage EDI Data Dictionary

2. Click the **Create New** link. The *Create EDI Data Dictionary* screen is displayed (see Figure 187).
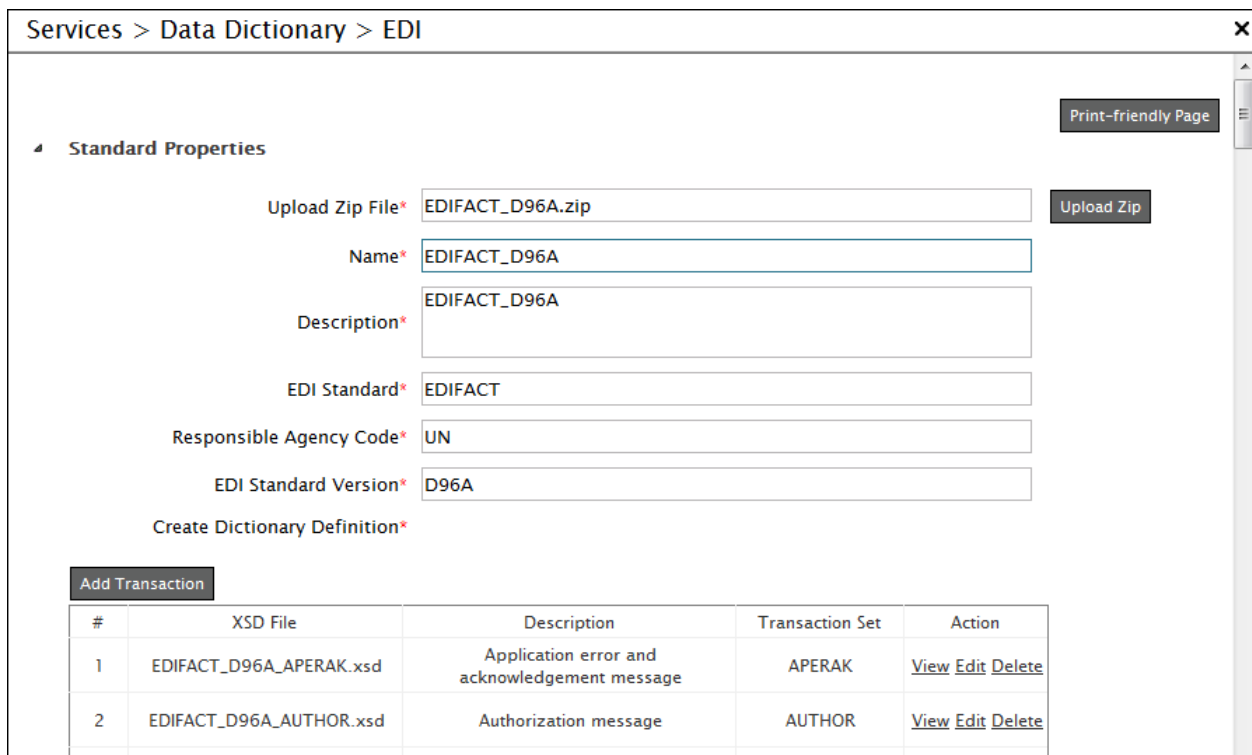
Figure 187: Create EDI Data Dictionary

3. Click **Upload Zip** button to select and upload the zip file. All XSD's and the values contained in the zip file are uploaded automatically. All the textboxes of the data dictionary are populated automatically. You need not enter or change any value in these fields.

> - Currently one data dictionary is already created for X12 004010 Version.
> - To create the EDI Data Dictionary of any other version, the ZIP will be provided by Adeptia. To get the XSD's of any other version contact support@adeptia.com.

4. Click the **Save** button.

CREATING SOURCE ACTIVITY

Adeptia Suite enables you to transfer data from any source location to any target location. In order to transfer any data, you need to first fetch the data. To perform the same, you need to create a Source activity. The Source activity enables you to specify the location, where the data is stored.

Depending on the location, where the data is stored, Adeptia Suite allows you to create following different types of source activities:

- Advance Database Source
- Database Source
- File Source
- FTP Source
- HTTP Source
- JMS Source
- LAN File Source
- Mail Source
- WebDAV Source
- Context Source

Context Source is used to get the data from the process flow context. To know how to use Context Source refer to the section Using Context Source and Context Target activity.

CREATING ADVANCED DATABASE SOURCE ACTIVITY

The Advanced Database Source activity provides the ability to fetch data from multiple tables of a database.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisites

- *Database Info* activity and *Advance Database Schema* must be created before creating Advanced Database Source activity.

This section describes how to create a Advance Database Source activity using the following details as an example:

Steps to create an Advanced Database Source Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to Services > Source and then click Adv. Database.

    The *Manage Advanced Database Source* screen is displayed (see Figure 188).

Figure 188: Manage Advanced Database Source

3. Click the **Create New** link. The *Create Advanced Database Source* screen is displayed.

4. Enter the name and the description of the new Advanced Database Source in the textboxes **Name** and **Description** respectively.

5. Select the database info activity and advanced database schema activity from the **Database Info** and the **Schema Name** dropdown lists respectively (see Figure 189).

Figure 189: Create Advanced Database Source

> To learn how to create Database Info activity, refer to the Creating Database Info section. To learn how to create the Schema activity, refer to *Creating Advance Database Schema Activity* section.

6. To edit the database query of the selected schema, click the **Edit Queries** button. The **Edit Query(s)** screen is displayed (see Figure 190).

Edit Query for Advanced Database Source
Schema Name: PointofSalesDatabaseSchema

Table Name	SQL Query	Whe
DB/sb4.eb8._._dbo._POS_/	SELECT purchase_order_id,itemnumber,name,quantity,price,tax,paymenttype,details shipdate FROM dbo [POS]	
DB/sb4.eb8._._dbo._POS_/sb4.eb11._._dbo._billTo_/	SELECT purchase_order_id,country,name,street,city,state,zip FROM dbo. [billTo]	
DB/sb4.eb8._._dbo._POS_/sb4.eb12._._dbo._shiptTo_/	SELECT purchase_order_id,country,name,street,city,state,zip FROM dbo. [shiptTo]	

Ok   Cancel

Figure 190: Edit Query

7. Edit the query and click **OK** button to submit the edited query and return to the **Manage Advanced Database Source** screen.

> - While creating Advanced Database Source, *Edit Query* button is disabled. You can edit the query only after saving the Advance Database Source activity. First you have to save the Advance Database Source and then edit the query.
>
> - You can edit the Query only for *Where* clause and not to change the table name or column names. To change the table name or select different columns, go to Advance Database Schema and edit the schema over there.
>
> - If you specify where clause in Advance Database Source as well as in Advance Database Schema, the *Where* clause of Advance Database schema is used during execution.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.

8. Click **Advanced Properties** to set the values of the advance properties related with Advance Database Source Activity.

9. In **Query Definition** field, Database Query is displayed in XML form. If you edit this query, database query defined using **Edit Query** button is overwritten.

10. Select the **Use Optimize Algorithm** checkbox. This algorithm sorts parent table with the primary key and all subsequent child tables with the joining key of their parent table. This algorithm applies only if all child tables of the parent table, at any level, are related to parent table by the same key. If this option is enabled, data fetching from the source database table becomes faster. Enable this option only if the database source is an SQL database.

11. You can select the **With (No Lock) Option** checkbox. If this option is enabled, records are fetched from the source database without any lock constraint. This option is applicable, only when **Use Optimize Algorithm** option is enabled (see Figure 191).

Figure 191: Advance Database Advance Properties

> **i** To learn about Advanced Properties refer to Changing Advanced Properties section.

12.   Click the **Save** button.

CREATING DATABASE SOURCE ACTIVITY

The Database Source activity provides the ability to fetch data from a table of a database. Consider that the details of all the employees are stored in a single database. Now, you will be required to fetch the details from a single table of a database. Therefore, while creating the process flow for the same, you will be required to create a Database Source Activity. However, to create a Database Source Activity, you will be required to consider the mentioned prerequisites.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisites

- *Database Info* activity and *Database Schema* must be created before creating Database Source activity.

This section describes how to create a Database Source activity using the following details as an example:

Steps to create a Database Source Activity

1.   On the Adeptia Suite homepage, click the **Develop** tab.

2.   Go to **Services > Source** and then click **Database**.

The *Manage Database Source* screen is displayed (see Figure 192).

Figure 192: Manage Database Source

3.   Click the **Create New** link. The *Create Database Source* screen is displayed.

4.   Enter the name and the description of the new Database Source in the textboxes **Name** and **Description** respectively.

5.   Select the database info activity and database schema activity from the dropdown lists **Database Info** and the **Schema Name** respectively (see Figure 193).

Figure 193: Create Database Source

ℹ️   To learn how to create Database Info activity, refer to the Creating Database Info section. To learn how to create the Schema activity, refer to the Creating Database Schema section.

ℹ️   To learn about Advanced Properties refer to Changing Advanced Properties section.

6.   Click the **Save** button.

CREATING FILE SOURCE ACTIVITY

The file source activity is used to retrieve the data from a file, which is stored on the machine where Adeptia Suite is running.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This section describes how to create a File Source activity using the following details as an example:

File Path	C:/HR_Files/Employee
File Name	Employee_PersonalDetails.xls
File Name Pattern	Date and time should be appended to file name in *MM-dd-yy-mm_hh_ss*
Create Unique File each time	yes

Steps to create a File Source Activity

1.   On the Adeptia Suite homepage, go to **Configure > Services > Source** and then click **File**.

The *Manage File Source* screen is displayed (see Figure 194).

Figure 194: Manage File Source

2. Click the **Create New** link. The *Create File Source* screen is displayed.

3. Enter the name and the description of the new File Source in the textboxes **Name** and **Description** respectively.

4. Enter the full path of the source file in the **File Path** field.

5. Enter the source file name in the **File Name** field. (see Figure 195).

Figure 195: Create File Source

> **i** To learn about Advanced Properties refer to Changing Advanced Properties section.

6. Click **Advance Properties** to set the values of the advance properties related with File Source Activity.

7. Select the **Delete File on Success** checkbox if you want to delete the source file after it is used in the process flow execution. This selection will delete the source file once the process flow is executed successfully during the process flow execution.

8. Click the **Save** button. The File source activity will be created and the dialog box will be closed.

> **i** While creating the File Source, you can also test it to make sure that path and file name specified in this activity is correct or not. This feature also helps you to avoid the failure of this activity while actually executing the process flow. To test this activity, fill up all the required fields and click **Test**. If the file specified in this activity is present in the specified folder, the test will be successful otherwise it will give an error.

CREATING FTP SOURCE ACTIVITY

The FTP Source activity enables you to define the name and path of the source file located at a FTP server, which is to be later transferred to a target location. On execution of the process flow, the FTP source activity will enable the Adeptia Server to fetch this source file from the specified FTP location.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisite: If the FTP Server you will be using is SSL then you need to validate it. To validate the same, you need to import certificates. To know how to create Keystore and import certificates, refer to the Creating Keystore section of *Administrator Guide*.

This section describes how to create a FTP Source activity using the following details as an example:

File Name	Employee_PersonalDetails.xls
FTP Host address	200.180.70.60
File Path	/HR_Files/Employee
Port No.	21
User Id	MyUserID
Password	mypassword
FTP Server Type	Normal

Steps to create a FTP Source Activity

1. On the Adeptia Suite homepage, click on the **Develop** tab.

2. Go to **Services > Source** and then click on **FTP**.

   The *Manage FTP Source* screen is displayed (see Figure 196).

Figure 196: Manage FTP Source

3. Click on the **Create New** link. The *Create FTP Source* screen is displayed.

4. Enter the name and the description for FTP Source in the textboxes **Name** and **Description** respectively.

5. Enter the host name/IP address and port of the FTP Server in the textboxes **Host Name** and **Port** fields respectively.

6. Enter the username in the **User ID** field.

7. Enter the password, if required, in the textbox **Password**. Then re-enter the password in the textbox **Confirm Password**.

> FTP is built on a client-server architecture and uses separate control and data connections between the client and the server. FTP users may authenticate themselves using a clear-text sign in protocol, normally in the form of a username and password, but can connect anonymously if the server is configured to allow it. Therefore, you need to enter the username and password to access the FTP site.

8. Enter the path of source file in the textbox **Remote File Path**.

Remote file path specify the location of the source directory where the file is located (see Figure 197).

Figure 197: Create FTP Source

> You can specify either the absolute path or the relative path depending upon the access control specified for you.
>
> Access Control is the process of authorizing users, groups, and computers to access objects on the network or computer.
>
> If you specify '/' in the beginning of the remote FTP file base location path then the provided path is an absolute path i.e. path starting from the root folder If '/' is not present in the beginning of remote FTP file base location path then the provided path is a relative path.

9. Enter the name of the source file in the textbox **File Name**.

10. Select the transfer mode from the drop-down list **Transfer Mode**. This option is used to specify the mode in which the source file is transferred to/from the FTP server.

This drop-down list has the following two options:

- BINARY
- ASCII

The file can be transferred either in Binary or in ASCII format.

In **BINARY** mode, a source file is transferred bit by bit (i.e.as the raw data without any modification) from one system to the other system. Both the files (the source file and the target file) will contain exactly the same sequence of bytes. In this way, the file is transferred in its exact original form.

However, in **ASCII** mode, source file is not transferred bit by bit as the transferred data is considered to contain only ASCII formatted text. Therefore, the target file that receives the transferred data is responsible for translating the format of the received data to the format that is compatible with the operating system at the client-end. So a file may use special control characters to format data and may be slightly changed to maintain itself with respect to the EOL (End Of Line) characters.

Select the **Binary** option if the source file is a binary file to avoid any changes in the file but if the source file has ASCII character(s) then you are recommended to select **ASCII** as to maintain EOL characters.

11. Select the transfer type from the drop-down list **Transfer Type**. This drop-down list has the following two options:

- Passive
- Active

Active FTP is more secure and beneficial for the FTP server administrator. However, it is disadvantageous for the client side administrator as when the FTP server attempts to make connections with the random high ports, most of the times it gets blocked by a firewall at the client side.

Passive FTP is beneficial for the client, but disadvantageous for the FTP server administrator. In this case, when the FTP server attempts to make connections , a successful connection is established with the server. However, one of the connection is established with a random high port, which most of the time gets blocked by a firewall on the server side.

Therefore, you are recommended to use the default selection **Passive** as it is beneficial for the client.

12. Depending on the type of FTP server, perform either of the following steps:

a. Select the **SFTP** checkbox if the FTP Server specified in the **Host Name** field is an FTP Server over SSH.

b. Select the **FTPS** checkbox, if the FTP Server, specified in the **Host Name** field is an FTP Server over TLS/SSL.

The subsequent fields **FTPS Mode** and **Protection Level** will be enabled when you select the **FTPS** checkbox.

13. Select the FTPS mode from the dropdown list **FTPS Mode**. This drop-down list has the following two options:

- *Explicit*

- *Implicit*

Select the FTPS mode with respect to the FTP Server that you are accessing.

> In **Explicit** mode (also known as FTPES), an FTPS client must "explicitly request" security from an FTPS server and then step-up to a mutually agreed encryption method. If a client does not request security, the FTPS server can either allow the client to continue in unsecure mode or refuse/limit the connection.
>
> In **Implicit** mode, negotiation is not allowed with implicit FTPS configurations. A client is immediately expected to challenge the FTPS server with a TLS/SSL message. If such a message is not received by the FTPS server, the server should drop the connection.
>
> By default it should be Explicit as in this mode client request security from FTPS server.

14. Select the protection level supported by the FTP Server from the dropdown list **Protection Level**. This drop-down list has the following three options:

- None
- Clear
- Private

By default, the option **None** is selected.

> Protection level is a single Telnet character code specifying the data channel protection level. This command indicates to the server what type of data channel protection the client and server will be using.
>
> The default protection level is **None**. The **Clear** protection level indicates that the data channel will carry the raw data of the file transfer, with no security applied. The **Private** protection level indicates that the data will be integrity and confidentially protected.

15. Select the checkbox **Validate Server** if you want the Adeptia Suite to authenticate the FTP server and subsequently validate the certificate sent by FTPS server against the certificate imported in Keystore. This certificate is required to authenticate the trusted FTP server,

This enables the drop-down list **Keystore Name**.

16. Select a keystore activity from the drop-down list **Keystore Name**.

> When the checkbox **Validate Server** is not selected it always accepts the certificate sent by FTPS Server. You must select this checkbox if you are using FTP over SSL. In addition, you need to create a **Keystore Activity** by importing the certificate which can be used to trust the FTP server. Keystore is repository of security certificates. To know how to create Keystore, refer to *Creating Keystore* section of Adeptia Suite *Administrator Guide*.

> To learn about Advanced Properties refer to the [Changing Advanced Properties](#) section.

17. Click **Advanced Properties** to expand the hierarchy. All the items in **Advance Properties** are displayed.

18. Select the **Delete on Success** checkbox if you want to delete the FTP source file after successful execution of the process flow. In case the process flow is aborted due to any reason, the source file will not be deleted.

19. The **Connector** dropdown lists the APIs that you can use to connect to the FTP Server.

    For any new activity, by default Secured Inet Factory option is selected in this dropdown list.

    The options of the **Connector** drop-down list changes as per your selection of the protocols that you want to use to establish the FTP connection. Please see the below table for more information:

Protocol	Options
FTP	Native Secured Inet Factory
SFTP	J2SCH (VFS) Secured Inet Factory J2SSH
FTPS	J2SCH (VFS) Secured Inet Factory

20. If you want to create a log file of your FTP activity then check the **Verbose** checkbox.

> The **Verbose** checkbox is enabled only when you select the **Secure Inet Factory** option from the **Connector** drop-down list. When you enable the **Verbose** checkbox, the log file is created within `<Adeptia Suite Installation folder>\AdeptiaServer\ServerKernel\Logs\Ftplogs` folder. Whenever you execute this activity a separate log file is created with the name `<ActivityName_MM-dd-yyyy hh-mm-ss.S>`.
>
> Here:

> *ActivityName* is the name of the FTP Activity for which log file is created.

21. Set the time limit (in seconds) in the **Data Timeout** field to end the infinite loop with no output. At times, when Adeptia Suite is connected with the FTP server, there could be connectivity issues. This could result in an infinite loop with no output. This issue can be resolved by setting a time limit if no data is transferred between Adeptia and FTP servers.

    By default, this is set to 60 seconds.

    This implies that if there is no data transfer for 60 seconds between both the servers, the connection is connection is considered broken and an error message is displayed (see Figure 198).

Figure 198: FTP Source Advance Properties

22. Click the **Save** button.

> ℹ You can verify the FTP source activity at design time. For this, click **Test**. This verifies the values in the **Host Name, Port, User ID, Password and Secured** fields and checks whether the specified FTP Server exists or not.

CREATING HTTP SOURCE ACTIVITY

The HTTP Source provides the ability to fetch the data from an HTTP server.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This section describes how to create a HTTP Source activity using the following details as an example:

File Name	EMP_PersonalDetails.xls
File Path	http://www.myorganization.com/HR_Files/Employee
Transfer Type	Secure
User Id	MyUserID
Password	mypassword

Steps to create a HTTP Source Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Source** and then click **HTTP**.

    The *Manage HTTP Source* screen is displayed (see Figure 199).

Figure 199: Manage HTTP Source

3. Click the **Create New** link. The *Create HTTP Source* screen is opened.

4. Enter the name and description of the new HTTP Source in the textboxes **Name** and **Description** fields respectively.

5. Enter the URL of the HTTP Server in the **HTTP URL** field.

6. Select the **Secure** checkbox the access to the HTTP server is secured.

7. Enter the username and password in the textboxes **HTTP Login Id** and **Password** respectively. Re-enter the password in the textbox **Confirm Password** field (see Figure 200).

Figure 200: Create HTTP Source

> To learn about Advanced Properties refer to Changing Advanced Properties section.

8. Click the **Save** button.

> You can verify the HTTP source activity at design time. For this, click **Test**. This verifies the values in the **HTTP URL** and **HTTP Login Id** fields and checks whether the HTTP source activity is able to connect to the specified HTTP Server.

CREATING JMS SOURCE ACTIVITY

The JMS Source activity provides the ability to specify a message of a queue or topic of a JMS Server as a source. A JMS provider is a messaging system that implements the JMS interfaces and provides administrative and control features. JMS clients are the programs or components, written in the Java programming language, that produce and consume messages.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

This section describes how to create a JMS Source activity using the following details as an example:

Connection Type	Queue
Transfer Type	Secure
User Name	MyUserName
Password	mypassword

Prerequisites

- *JMS Provider* activity must be created before creating *JMS Source* Activity.

Steps to create a JMS Source Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Source** and then click **JMS**.

   The *Manage JMS Source* screen is displayed (see Figure 201).

Figure 201: Manage JMS Source

3. Click the **Create New** link. The *Create JMS Source* screen is displayed.

4. Enter the name and the description of the new JMS Source in the textbox **Name** and **Description** respectively.

5. Select the JMS Provider activity from the dropdown list **JMS Provider**.

> To learn how to create JMS Provider activity, refer the Creating JMS Provider section.

6. Select the Connection Type as from the dropdown list **Connection Type**. This drop-down list has the following options:

- TYPE
- QUEUE

7. Select the **Durable Subscriber** checkbox if the JMS Subscriber is durable. If a client needs to receive all the messages published on a topic, including the ones published while the subscriber is inactive, it uses a Durable Subscriber. This is applicable only when the connection type is Topic.

8. Enter the subscriber ID in the textbox **Subscriber ID**.

9. Enter the name of queue or topic as configured in the JMS Server in the textbox **Queue Or Topic Name** (see

New JMS Source

▲ Standard Properties

Name*	Receive_EMP_Details_JMS
Description*	Receive employee details from JMS server
JMS Provider*	EvalJMSE_JMSProvider ▾
Connection Type*	QUEUE ▾
Durable Subscriber	☐
SubscriberID	
Queue Or Topic Name*	Queue1
Message Type	TEXT ▾
MessageSelector	
Time Out	Sec(s)
UserName	MuUserName
Password	••••••••

Save   Test

10. Figure 202).

Figure 202: Create JMS Source

11. Select the type of message, which you want to fetch, from the **Message Type** drop-down list. You can select :

    a.   Text

    b.   Byte

    c.   Both

12. If you want to select a specific message from the JMS Server, enter the message selector in the textbox **Message Selector**.

The message selector is used to specify the filter criterion to receive a message that the user is interested in. The messages can be filtered based on only header references and properties references of the message. The message selector uses SQL92 query syntax to define the filter criteria. SQL92 is widely used to query the entire standard databases i.e. Oracle, SQL Server. The only difference between the database query and the message selector query is that the message selector uses, only a part of the query which is after the where clause.

The following message selector selects messages with a message type of car and color of blue and weight greater than 2500 pounds:

```
JMSType = 'car' AND color = 'blue' AND weight > 2500
```

The following message selector selects message with the property Sport has value either as

> Basketball or Football.
>
> Sport in ('Basketball','Football')

13. Enter the time in seconds in the field **Time Out**. If any message is not received in this interval, process flow execution will be stopped. If Time Out field is left blank, JMS Source activity checks for the specified message and if message is not available, process flow is aborted, without waiting for message.

14. Enter the username and password (if required) to connect to JMS Server in the textboxes **UserName** and **Password** fields respectively. Then, re-enter the password in the *Confirm Password* field.

> To learn about Advanced Properties refer to Changing Advanced Properties section.

15. Click the **Save** button.

> You can verify the JMS source activity at design time. For this, click **Test**. This verifies the values in the *JMS Provider, Connection Type* and *Queue/Topic Name* fields and checks whether the source activity actually exists in the specified location.

CREATING LAN FILE SOURCE ACTIVITY

The LAN File Source activity provides the ability to fetch the data from a file, which is accessible on the Local Area Network (LAN).

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This section describes how to create a LAN Source activity using the following details as an example:

File Name	Employee_PersonalDetails.xls
File Path	\\FileServer\HR_Files\Employee
Transfer Type	Secure
File System	Windows
User Id	MyUserName
Password	mypassword

Steps to create a LAN File Source Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Source** and then click **LAN File**.

   The *Manage LAN File Source* screen is displayed (see Figure 203).

Figure 203: Manage LAN File Source

3. Click the **Create New** link. The *Create LAN File Source* screen is displayed.

4. Enter the name and the description of the new LAN File Source in the textboxes **Name** and **Description** respectively.

5. Enter the network path of the source file in the textbox File Path in the following format:

   \\hostname\folder name

   > You can also use IP address instead of hostname. Make Sure that the path you have defined, is accessible from the machine where Adeptia Suite is running.

6. Enter the name of the source file in textbox **File Name**. For Example: Employee_Info.xls

7. Select the file system from the drop-down list **File System**. This drop-down list has the following two options:

- Windows

- Unix

When Adeptia Suite is installed on Windows, the LAN File Source uses windows service to connect to remote machine to access any file. It just connects once and uses the same connection with the same User ID and Password (which is stored in the cache) every time. If you want to enforce the validation of User ID and Password every time while accessing the file on a remote machine, select the **Use VFS** checkbox.

8. If authentication is required to access the source file, select the **Secure** checkbox.

9. Enter the username in the textbox **User ID**.

10. Enter the password, if required, in the textbox **Password**. Then re-enter the password in the textbox **Confirm Password** field.

11. Click **Advance Properties** to set the values of the advance properties related with LAN File Source Activity.

12. Select the **Delete File on Success** checkbox if you want to delete the LAN source file after it has been used in the process flow execution. On the basis of this selection, the LAN source file will be deleted, after the successful execution of the process flow. In case the process flow is aborted due to any reason, the source will not be deleted. (see Figure 204).

Figure 204: LAN File Source Activity

> To learn about Advanced Properties refer to Changing Advanced Properties section.

13. Click the **Save** button.

> ℹ️ You can verify the LAN file source activity at design time. For this, click **Test**. This verifies the values in the **File Path**, **User ID** and **Password** fields and checks whether the file actually exists in the specified location. To test this activity, fill up all the required fields and click **Test**. If the file specified in this activity is present in the specified folder, the test will be successful otherwise it will give an error.

CREATING MAIL SOURCE ACTIVITY

Mail Source provides the ability to specify a file as a source that is accessible via Mail.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This section describes how to create a Mail Source activity using the following details as an example:

Mail Server Type	POP3
Incoming Mail Server	pop.mycompanydomain.com
Port	110
SSL Enabled/Disabled	Disabled
User Name to access the mail box	MyuserID@mycompanydomain.com
Mail box password	mypassword
Search Criteria	Sent by JohnSmith@salespartner.com with subject as *EMPDetails*
Data Location (body/attachment)	Attachment
Attachment File Name	Employee_PersonalDetails.xls

Steps to create a Mail Source Activity

1. On the Adeptia Suite homepage, click the Develop tab.

2. Go to **Services → Source** and then click **Mail**.

   The *Manage Mail Source* screen is displayed (see Figure 205).

Figure 205: Manage Mail Source

3. Click the **Create New** link. The *Create Mail Source* screen is displayed.

4.   Enter the name and the description of the new Mail Source in the textboxes **Name** and **Description** respectively.

5.   Select the Internet standard protocol to be used for retrieving incoming mails from the dropdown list **Protocol**. You can select either POP3, IMAP4 or MAPI protocol. Based on the selected protocol, the default port number for that protocol is displayed in the textbox **Port**.

6.   Enter the incoming mail server address in textbox **Incoming Mail Server**.

> To connect Adeptia Suite with Microsoft Exchange Server, you need to buy a third party tool called *J-Integra for Exchange*. J-Integra for Exchange is a high performance middleware bridge that enables Java Exchange interoperability. If you want to retrieve mails from an Exchange Server using J-Integra, select *MAPI* in the **Protocol** dropdown list.
>
> If **MAPI** is selected in the **Protocol** dropdown list:
> - Enter name of the exchange server in the Incoming Mail Server field.
> - Enter the domain name in the Domain field.
> - Enter the name of the CDO host machine in the CDO host machine field. **CDOConfig.exe** is a tool that comes with the J-Integra for Exchange SDK and is used for configuring CDO. Host where CDO is configured is called CDO host machine.
>
> For detailed information about Jintegra for Exchange, refer to the information provided at the following URL:
>
> http://j-integra.intrinsyc.com/products/exchange/

7.   Select the **Enable SSL** checkbox, if the specified incoming mail server requires a secure connection.

   The default port number for the selected protocol is displayed in the *Port* field.

8.   If you want to change this port number, enter the new port number in the textbox **Port** (see Figure 206).

Figure 206: Create Mail Source

9.   Enter the username and password of Mail Server in the textboxes **User ID** and **Password** respectively. Then, re-enter the password in the textbox **Confirm Password**.

10.   Select any of the following filter criteria:

- Sender E-mail

- Mail Subject

- Mail Content

You may select more than one filter criteria.

11.   Enter the sender's email address and subject of email in the textboxes **Sender Email** and **Subject** respectively.

12. To define search based on mail content, enter the required content in the textbox **Mail Content** field.

> (i) You can also use asterisk and wild cards in **Mail Content** field.

13. Select the location of data in the mail whether it is in attachment or in email body from the drop-down list **Data Location**. This is mandatory.

14. If you select an Attachment in the Data Location field, enter the name of the file in the textbox **File Name**.

> (i) Mail Source activity does not support more than one file attachment.

15. If you want to leave a copy of the mail on the Server, select the **Leave Copy On Server** checkbox.

16. Click **Advance Properties** to set the values of the advance properties related with Mail Source Activity

17. Click the **Save** button.

> (i) You can verify the mail source activity at design time. For this, click **Test**. This verifies the values in the **Incoming Mail (POP3) Server**, **Port**, **User ID** and **Password** fields and checks whether the source activity actually exists in the specified location.

> (i) When a mail event triggers process flows, each process flow uses a mail source. At times, when multiple process flows use a mail source, errors can occur. In such a case, you can retry the action before exiting the mail source. You can set the number of retries and the sleep time between each retry, in case an error occurs while using a mail box. To change the settings, refer to the *abpm.mailEvent.retry* property in the *Administrator Guide*.

CREATING WEBDAV SOURCE ACTIVITY

WebDAV is a method for allowing remote access to local folders via an HTTP-based web browser. The WebDAV Source activity provides the ability to specify files that is stored in a WebDAV Server, as a source.

This feature is available in:

Enterprise	Premier	Professional	Express
✓			

Steps to create WebDAV Source Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Source** and then click **WebDAV**.

The *Manage WebDAV Source* screen is displayed (see Figure 207).

Figure 207: Manage WebDAV Source

3.   Click the **Create New** link. The *Create WebDAV Source* screen is displayed.

4.   Enter the name and description of the new WebDAV Source in the textboxes **Name** and **Description** respectively.

5.   Enter the name of the WebDAV Server and Server port on which WebDAV Server is running, in the textboxes **Server Name** and **Server Port** respectively. For example, enter the server name **WebDAV1** and the server port number **8080**.

6.   If the WebDAV is secured i.e. username and password are required to access it, then select the **Secure** checkbox and enter the username and password of the WebDAV Server in the **User ID** and **Password** fields respectively. Re-enter the password in the textbox **Confirm Password**.

> If you are using WebDAV Server, which is built in with Adeptia Suite, the default Username is "Administrator" and the password is "indigo".

7.   Enter the source file with full path in the *File Name* (full path) field (see Figure 208).

Figure 208: WebDAV Source Activity

> To learn about Advanced Properties refer to Changing Advanced Properties section.

8. Click **Advance Properties** to set the values of the advance properties related with WebDAV Source Activity.

9. Click the **Save** button.

> You can verify the WebDAV source activity at design time. For this, click **Test**. This verifies the values in the *Server Name* and *Server Port* fields and checks whether the source activity actually exists in the specified location.

CREATING SCHEMA ACTIVITY

You can use a schema to parse data from all the supported data type formats and transform it into any of the supported data types. What a schema actually does is that, it apprehends data from the source, transforms it into XML, and then commits it to the source in the requested format. If you want data transformation then you need to use different types of schemas both at the source and target end of your Process flow. Please see the figure (see Figure 196) to get more information on how a schema works.
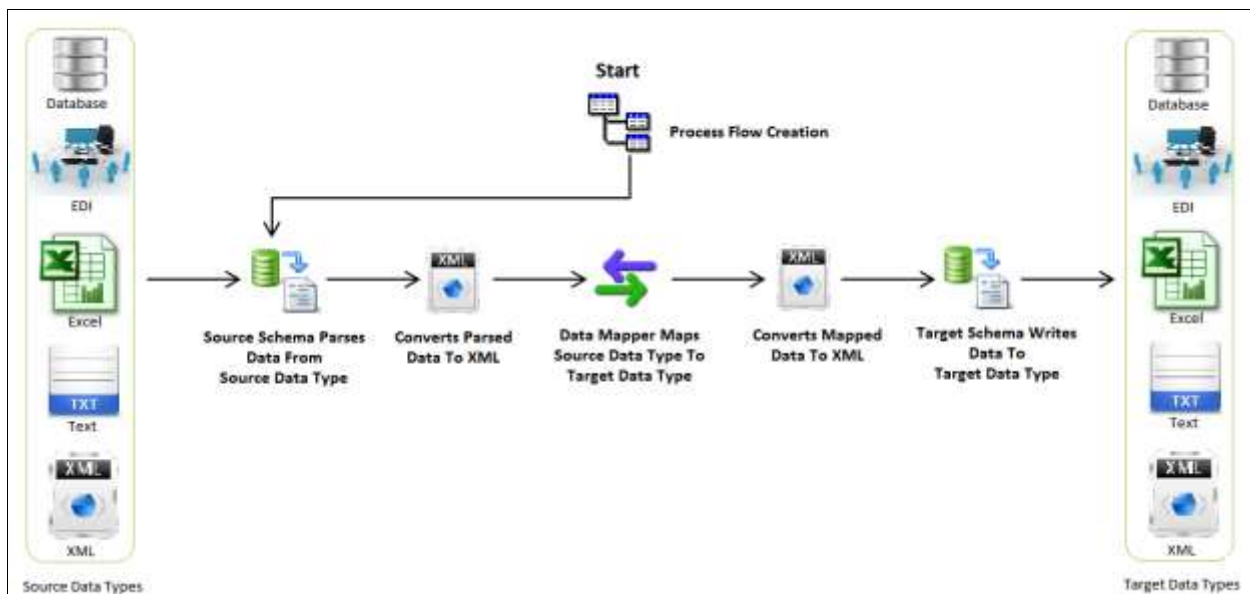
Figure 196: Process For Data Conversion Using Schema

Business Example

Your organization has asked you to compile all the information, that is saved on a common server, about their inactive users and convert it into database entries which they will use for archiving. Your job is to fetch all the relevant data from this stack of information and convert it into acceptable database entries. For this reason you need the following knowledge:

- An understanding of fetching data from different file types
- An understanding of converting that fetched data into target file format

Types of Schema Activities

Adeptia Suite provides the following type of schema activities:

- Advance Database Schema
- Advance Positional Schema
- Advance Text Schema
- Database Schema
- Excel Schema

- Positional Schema
- Text Schema
- Word Schema
- XML Schema
- XML Validator
- EDI Schema

Adeptia Suite allows you to create schemas in two ways:

- Using Definition File
- Entering the Fields Sequentially

Using Definition File

You can create a schema using a Definition File in three ways:

- Using Data File
- Using Field File
- Using XSD File

These methods may vary across different schemas. Their compatibility with the schemas are outlined in the table below.

Table 1: Definition File Methods Used for Creating Schemas

Schema	Data File	Field File	XSD File
Advance Database Schema			✓
Advance Positional Schema		✓	✓
Advance Text Schema		✓	✓
Database Schema			✓
Excel Schema	✓	✓	✓
Positional Schema		✓	✓
Text Schema	✓	✓	✓

Using Data File

A data file contains the actual data which we use as source or target during the execution of a process flow. It can be the same file that is used in the process flow or another sample file of same format.

Using Field File

A field file is a Comma Separated Values (CSV) file that contains the name of the fields and their definitions which are separated by comma. This option is helpful in case the number of fields in the source or target data file is very large. All the field names are picked up from this CSV file. If the data type is *Date* then, format of the date must be specified after the data type, separated by comma.

> ℹ In case a field is defined as *Date* or *Time* type and their format is not defined then, the default date format will be MM/dd/yy and time format will be blank.
>
> When copying a field file, you need to verify that the field format is correct and there are no extra lines in that document. Else, the schema will generate an error while converting it to HTML.

Field File format for Advance Positional Schema

The Field file format for Advance Positional Schema can be of two types:

- Based on Start Position and End Position
- Based on Field Length

Field File format for Advance Positional Schema based on Start and End Position

<Record Identifier1>:<Value>,<Record Identifier2>:<Value>

<RecordIdentifier Value>,<FieldName>,<Description>,<DataType>,[DateFormat],[TimeFormat],<Start Position>,<EndPosition>,<Alignment>,<Skip>

In case of Advance Positional Schema, Record Identifier, and Value should be specified at the beginning of the CSV file as displayed below:

```
a:first,b:second
first,a,first_field,string,,,1,11,L,F
first,name,name_of_employee,string,,,12,21,L,T
first,empid,employee_ID,int,,,22,36,L,F
second,b,second_field,string,,,1,11,L,F
second,DOB,date of
birth,date,yyyy/dd/MM,hh:mm:ss,12,24,L,F
second,Address,Address of employee,string,,,25,44,L,T
```

where: **L** means left alignment

R means right alignment

T means True

F means False

Field File format for Advance Positional Schema based on Field Length

<RecordIdentifier Value>,<FieldName>,<Description>,<DataType>,[DateFormat],[TimeFormat],<Length>,<Alignment>,<Skip>

In case of Advance Positional Schema, Record Identifier, and Value should be specified at the beginning of the CSV file as displayed below:

```
a:first,b:second
first,a,first_field,string,,,11,L,F
first,name,name_of_employee,string,,,10,L,T
first,empid,employee_ID,int,,,15,L,F
second,b,second_field,string,,,11,L,F
second,DOB,date of
birth,date,yyyy/dd/MM,hh:mm:ss,13,L,F
second,Address,Address of employee,string,,,20,L,T
```

where: **L** means left alignment

  R means right alignment

  T means True

  F means False

Field File format for Excel and Text Schema

<Field Name>,<Data Type>,[Date Format],[Time Format]

```
NAME,string,,
PHONE_NO,number,,
DOB,date,MM/dd/yy,hh:mm:ss
DOJ,date,MM/dd/yy,
```

Field File format for Positional Schema

Field file format for Positional Schema can be of two types:

- Based on Start Position and End Position
- Based on Field Length

Field File format for Positional Schema based on Start and End Position

<Field Name>,<Description>,<Data Type>,[Date Format],[Time Format],

<Start Position>,<End Position>,<Alignment>,<Skip>

Following is the content of sample CSV file used to create Positional schema:

```
name,name of employee,string,,,1,10,L,F
empid,employee ID,int,,,11,30,L,T
DOB,Dat of birth,date,yyyy-dd-MM,hh:mm,31,60,L,F
```

where: **L** means left alignment

  R means right alignment

  T means True

  F means False

Field File format for Positional Schema based on Field Length

<Field Name>,<Description>,<Data Type>,[Date Format],[Time Format],

<Length>,<Alignment>,<Skip>

Following is the content of sample CSV file used to create Positional schema:

> name,name of employee,string,,,10,L,F
>
> empid,employee ID,int,,,20,L,T
>
> DOB,Dat of birth,date,yyyy-dd-MM,hh:mm,30,L,F

where: **L** means left alignment

  R means right alignment

  T means True

  F means False

Using XSD File

The XML Schema Definition (XSD) file describes the elements in an XML document. The XSD file that you will use to create a schema must be compliant to the Adeptia-Suite's format. To get an Adeptia-Suite compliant XSD file, you can edit any existing schema and download its XSD file. You can also edit the fields in that XSD file and use it to create the schema. For example, you have created a schema of 100 fields and you want to create another schema of only 90 fields by using the existing 100 field schema. You can download the XSD file of the existing schema, delete 10 additional field by editing the XSD file, and use that XSD file to create another schema of just 90 fields.

> In case the schema definition contain characters which do not fall in the default character set encoding then, before uploading the XSD file you should first define the character set encoding to be used at the schema creation level. For details, refer to the *Setting Character Set Encoding While Designing Schema* section.

Entering Fields Sequentially

This is a manual way of creating a schema. If you select this option, you will then have to manually enter the field's name and their data type in the correct sequence.

When creating a schema (except XML schema), the schema automatically creates a Record Number attribute at the record level. It is available for each record. If you use a schema at the source level, then the schema will populate this attribute in the intermediate XML file at the record level. The Record Number attribute always starts at 1. If the schema detects an error, then it will generate this attribute in the Error File. For example, if an error is found at record number 5 in the source file, then the Error File will display Record Number 5.

Error Records

On execution of a process flow, there is a possibility that some of the records in the source file are not according to the schema definition. The schema treats them as error records when the schema parses the source data. Consider an excel schema whose field format is as shown in the figure (see Figure 209):

#	FieldName	Type	Format	SubFormat	Data Mode
1	Account_Number	number ▼	mmddyyyy ▼	hh:mm:ss ▼	Plain Text ▼
2	Product_Code	string ▼	mmddyyyy ▼	hh:mm:ss ▼	Plain Text ▼
3	Quantity	number ▼	mmddyyyy ▼	hh:mm:ss ▼	Plain Text ▼
4	Unit_Price	number ▼	mmddyyyy ▼	hh:mm:ss ▼	Plain Text ▼

Figure 209: Excel Schema Example

The corresponding data file of the excel schema is shown in the figure (see Figure 210):

A	B	C	D
Account Number	Product Code	Quantity	Unit Price
99999999	AL-CH1	5	34.66
12123456	AL-CH2	1	50
CA-999999	AL-CH3	3	3
58963485	AL-CH4	4	55
C3-12345A	AL-CH4	4	55
75963487	AL-CH4	4	55
85749245	AL-CH4	4	55
98752864	AL-CH2	7	350

Figure 210: Data File Example

As you can note that in the schema definition, the data type of the **Account_Number** field is **Number**. However, in the source data file, there are two records where the **Account_Number** field contains a string data type. Now, when the schema will parse this file, the data for these two records will not match as per the schema definition and hence these two records will be treated as error records.

Similarly when you use a schema at the target side then also the schema can generate error records.

In this scenario, you may want to handle these error records as per your requirement. You can do this while creating the Process Flow, where you will be actually using this schema.

> To know, how to handle these error records, refer to the Handling Error Records section.

CREATING ADVANCE DATABASE SCHEMA ACTIVITY

You need to create an advanced database schema activity if you want to parse data from multiple tables within a particular database. You can also use this schema if you wish to insert or update data into multiple tables on a single database. The Advance Database schema uses the predefined *Database Info* to connect to the database.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisites

- You should create *Database Info* activity before creating A*dvance Database Schema* activity.

Steps to create the Advance Database Schema

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Schema** and then click **Adv. Database**.

   The *Manage Adv. Database Schema* screen is displayed (see Figure 211).

Figure 211: Manage Advance Database Schema

3.   Click the **Create New** button. The **Create Advance Database Schema** screen is displayed.

4.   Enter the name and description for the new Advance Database Schema in the **Name** and **Description** textboxes respectively.

5.   Select the database info activity from the **Database Info** dropdown list (see Figure 212).

Figure 212: Create Advance Database Schema

> ℹ️   To learn how to create Database Info activity, refer to the Creating Database Info section.

6.   To define a schema definition, select one of the following options:

- Use XSD File
- Use Database Table

7.   To select the XSD file, which contains the schema information, select the **Use XSD File** radio button and then click the **Browse** button.

8. To define a schema using database table, select the **Use Database Table** radio button and then click the **Browse Tables** button.

    The *Select Schema* screen is displayed with the list of RDBMS Schema in case of *SQL Server* and *DB2* Database Info (see Figure 213).

Figure 213: Select Schema

9. Select the RDBMS schema that you need and click the **Get Tables** button. If you need to filter your search by some key word or a range of characters then enter the text in the text box as in Figure 213 and then click the **Get Tables** button.

    The **Select Table** screen is displayed with the list of tables (see Figure 214).

Figure 214: Select Tables

> A **Close** button appears on the *Select Table* screen, in case of SQL Server or DBO Database Info. Clicking this button takes the user to the *Select Schema* screen.
>
> If the schema and its tables are created on DB2, then you need to remember that the schema name in DB2 is case-sensitive. Else, it will display the same table more than once.
>
> If you want to know more about the various key words and search parameters then click on the Help link on the webpage (see Figure 213).

10. Select the table that you need and click the **Get Columns** button.

The following screen is displayed with the list of columns and their data types (see Figure 215).
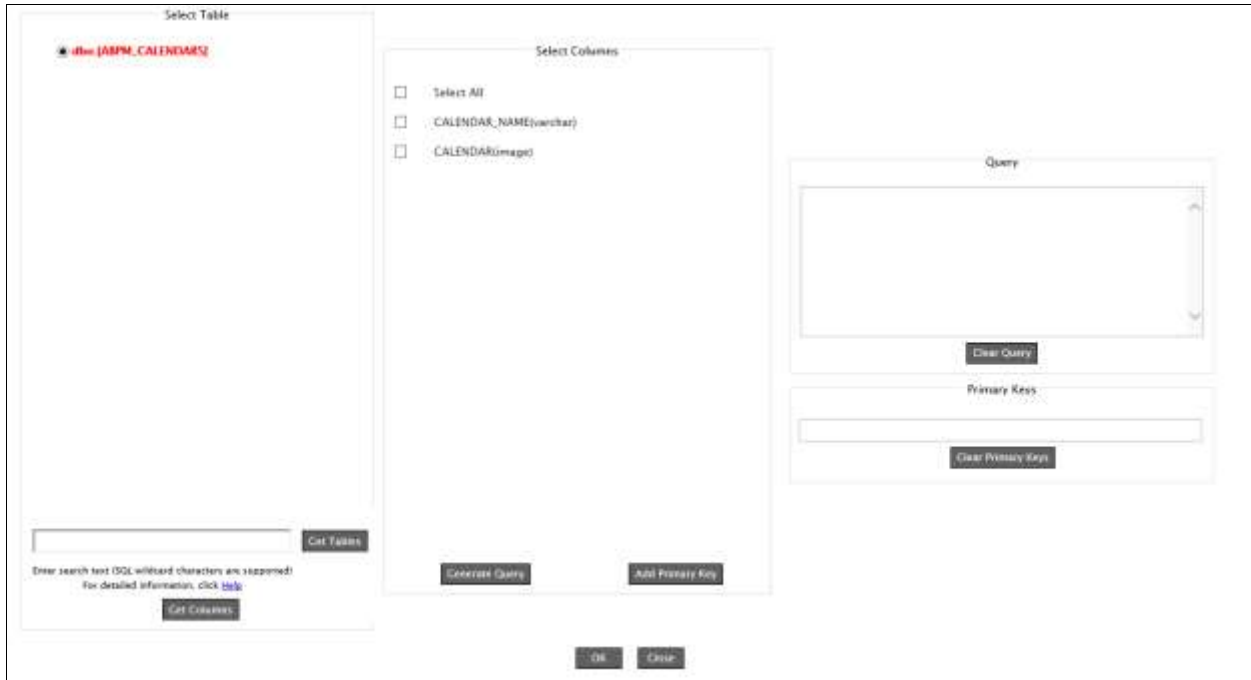
Figure 215: Select Columns and Primary Key

11. In the **Select Columns** grid, select the required column(s) and click the **Generate Query** button to generate the database query. The generated query is displayed in the **Query** list box. You can also specify the `Where` clause within the generated `Select` query (see Figure 216).
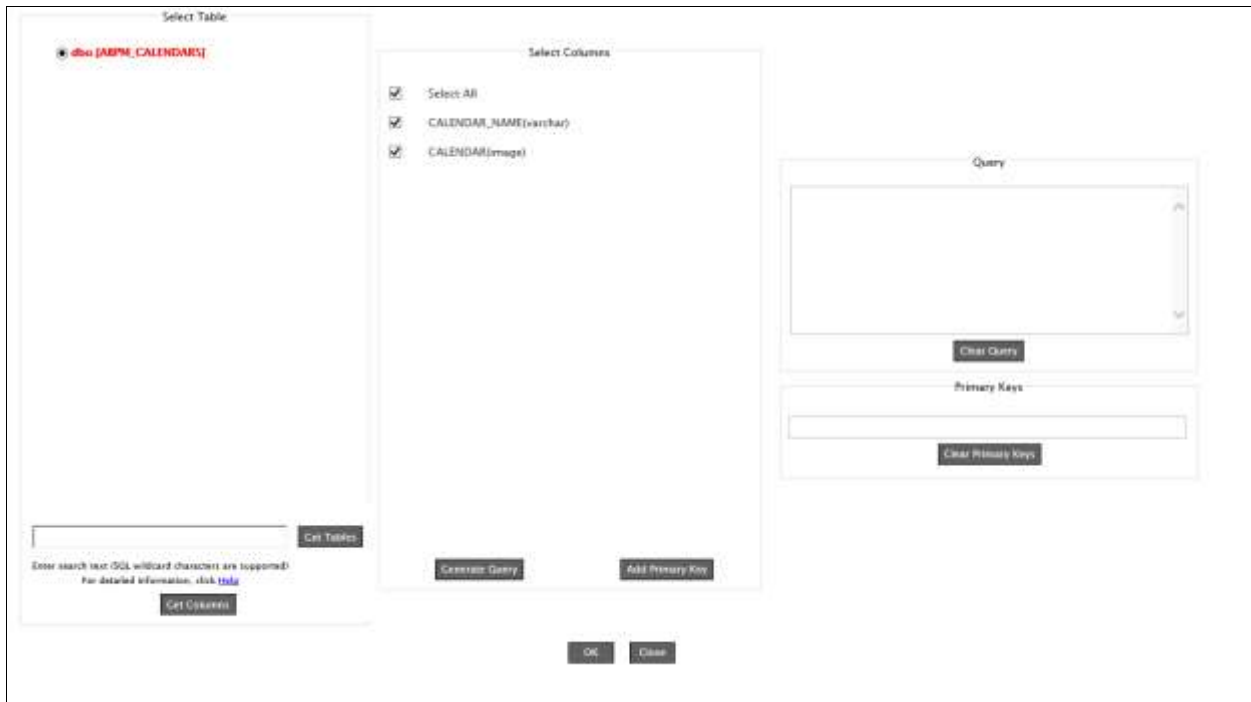
Figure 216: Generate Query

> **i** There should not be any special character (except $ and SID#) in column name.

> **i**
> - The Adeptia Suite validates the query once you click the **Save** button.
> - In case some SQL function is used or some calculation is done over the Column Name(s), use the alias name for that Column Name(s).
>
> For example, for a query like:
>
> ```
> SELECT SID,Name+Dept,Salary FROM dbo.Employee
> ```
>
> You can use:
>
> ```
> SELECT SID, (Name+Dept) as AliasName,Salary FROM
> dbo.Employee
> ```
>
> Reason:
>
> While getting the result set, you have to assign the output of (Name+Dept) to some new field.

12. To designate a column as primary key, select the column(s) that you need and then click the **Add Primary Key** button. The selected column is displayed in the **Primary Key** textbox.

> **i** At times, you may not use the Primary Key in the query, but append it internally in the query. You need to ensure that the Primary Key name should be the same at both the places. Else, the schema will fetch the data twice for the Primary Key column and result in errors.

13. Click **OK** to return to the *Create Advance Database Schema* screen. You can see the selected query and primary key in their respective fields.

14. To add a child table to the selected table, click the **Add Child Table** button in the *Create Advance Database Schema* screen. (see Figure 217).

Figure 217: Create Child Table

15. Click the **Browse Tables** button in the child table. The Adeptia Suite displays the *Select Schema* screen with a list of RDBMS Schema in case of SQL Server and DB2 Database Info (refer to Figure 213). If HSQLDB Database Info is selected, then the Adeptia Suite will display the *Select Table* screen (refer to Figure 214).

16. On the *Select Schema* screen, select the required RDBMS schema and click the **Get Tables** button. The Adeptia Suite will then show you the *Select Table* screen with the list of tables (refer to Figure 214).

> A **Close** button appears on the *Select Table* screen, in case of *SQL Server* or *DBO* Database Info. Clicking this button takes the user to the *Select Schema* screen.

17. Select the table which you want to display and then click the **Get Columns** button. The following screen is displayed (see Figure 218).

Figure 218: Select Column, Primary and Related Keys

18. In **Select Columns** grid, select the required column(s) and click the **Generate Query** button to generate the database query. The generated query is displayed in the **Query** field. You can also specify the `Where` clause within the generated `Select` query.

> ℹ️ A column name should not include any standard SQL keyword (for example, *Identity*), as it generates an error, when you use the Advance Database schema as a source or target database.

19. To designate a column as a Related Key, select the column(s) that you want to relate and click the **Add Related Key** button. The selected column is displayed in the **Related Keys** list box (see Figure 219).

Figure 219: Add Related Key

20. Select the column(s) that you want to change the Primary Key and click the **Add Primary Key** button. The selected column is displayed in the **Primary Keys** list box.

21. Click **OK** to return to the *Advance Database Schema* screen.

22. To add another independent database table, click the **Add Root Table** button and repeat the steps from 8 to 13. Alternately, you can create a root table from the *Create Advance Database Schema* screen by clicking the **Add Root Table** button.

> At the Root level, you should not use the same table more than once.

23. Click **Advanced Properties**.

The advanced properties of Advanced Database Schema are displayed (see Figure 220).

Figure 220: Advanced Properties

24. If required, change the default **Character Set Encoding** according to the encoding of your data file. This value is used to parse the data.

25. Enable the Auto increment Key Support checkbox if required. This feature is used when the parent table's Auto Increment column is referenced in the child table. Enabling this checkbox, automatically populates the value in the child table's foreign key column with the Auto increment column's value from the parent table.

26. There are some Unicode Characters, which are reserved characters in XML. You can filter these characters by selecting the **Filter Invalid XML Characters** option.

27. To enable the query batch update, select the **Query Batch Update** checkbox and enter the batch size in the **Query Batch Size** textbox.

> Enabling the **Query Batch Update** and setting the **Query Update Batch Size** to a positive integer value causes updates to be sent to the database in batches of the specified size.
>
> For example, setting the **Query Update Batch Size** to 10 will group 10 separate statements and submit them as a single batch.

> Setting the **Query Update Batch Size** to 0 will cause the **Database Target** to disable batch execution and send updates to the database for every execution of statement.
>
> It is primarily used for performance optimization. The advantage of batch update is to reduce the network calls to database rather than executing single SQL statement. You can send multiple queries to the database at a time using batch update feature and this reduces the number of JDBC calls and improves the performance of the Adeptia Suite, network traffic, and also of your Process Flow.
>
> **Query Batch Update** is supported for `Insert` and `Update` operation only.

28. Enter the number of statements that you want to commit to the database at a time, in the **Commit Count** textbox.

> By default in JDBC, transaction starts and commits after each statement's execution on a connection. That is the behaviour when commit count is set to 1. Obviously, this mechanism gives good facility for users if they want to execute a single statement. But it gives poor performance when the schema executes multiple statements on a connection. This is because by default, the schema commits after each statement that in turn reduces the performance by issuing unnecessary commits. The remedy is to set commit count size to a value greater than 1 and it will then cause the **Database Target** to issue commit instruction to the database after a set of statements execute. This is usually called as batch transaction.

> To learn about other Advanced Properties refer to the [Changing Advanced Properties](#) section.

29. Select the project under which you want to save this Advance Database Schema activity from the **Project** drop-down list.

30. Select the owner for this activity from the **Owner** drop-down list.

31. Click the **Save** button.

Special Usage Scenario

Delete Records from target table

In Advance Database schema, you can set action attribute to delete the records from the target database table, if they are matching with the records of source database table. Source and target records are matched based on primary key. This attribute is enabled in Data Mapper, while mapping source and target schemas.

Steps to set action attribute to delete matching records

Load required source and target schema in Data Mapper. In target schema, there will be an *Action* attribute.

1. Create a constant '*delete*' and map it to *Action* attribute of the target schema.

> In order to delete records where the target end database is ORACLE, IBM DB2, MS SQL server or HSQLDB, you should use the keyword "*delete*". However, for MS SQL server DBMS, you can use the "*cancel*" keyword. You cannot use the "*cancel*" keyword for other RDBMS except MS

SQL server.

2. Save the Mapping activity.

To learn how to use Data Mapper, refer to the [Using Data Mapper](#) section.

Enable RollBackOn Error Attribute

In Advance Database schema, you can enable the *RollBackOnError* attribute. In case your schema encounters any error in the target database then you will need to enable *RollBackOnError* attribute to roll back data updation or insertion. When you map source and target schemas only then the Data Mapper enables this feature.

Steps to Enable RollBackOnError attribute

1.   Load the source and target schema in the Data Mapper. In the target schema, there will be a *RollBackOnError* attribute.

2.   Create a constant 'true and map it to *RollBackOnError* attribute of the target schema.

3.   Save the Mapping activity.

> **i**
>
> Suppose there is an hierarchy as:
>
> R1
>
> -   R1C1
>
>   - R1C1C1
>
> If you apply the *RollbackOnError* attribute on *R1C1*, then in case of an error condition in *R1C1* or *R1C1C1*, rollback will be up to *R1C1* only. The *RollbackOnError* attribute will not affect *R1*.
>
> According to this implementation, the Adeptia Suite will display the error count in the Process Flow log.
>
> To learn how to use Data Mapper, refer to the [Using Data Mapper](#) section.

CREATING ADVANCE POSITIONAL SCHEMA ACTIVITY

The Advance Positional schema activity defines the procedure to read data from and write data to a multiple record format file. You can do this by specifying the names and positions of the fields from which you want to fetch the data from.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create Advance Positional schema

1.   On the Adeptia Suite homepage, go to **Configure → Services → Schema** and then click the **Adv. Positional**.
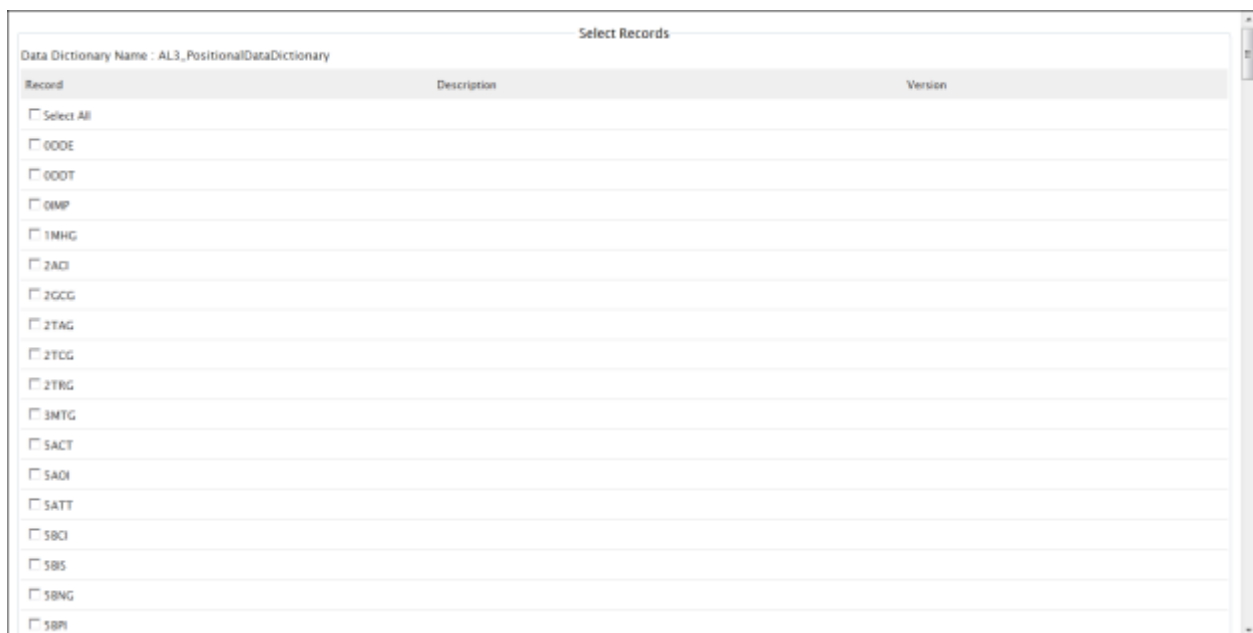
The *Manage Adv. Positional Schema* screen is displayed (see Figure 221).

Figure 221: Manage Advance Positional Schema

2. Click the **Create New** link. This action will show the *Create Advance Positional Schema* screen.

3. Enter the name and description for Advance Positional Schema in the **Name** and **Description** textboxes respectively.

4. You need to create the schema definition for the Advance Positional Schema. You can define the schema in three ways. These are outlined as:

    - Import Definition file
    - Use Data Dictionary
    - Enter the Fields Sequentially

5. Select the **Import Definition File** radio button, select the type of file from the dropdown list, and then click the **Browse** button to select the file that you want to use for defining the schema using the definition file .

6. To define the schema using a data dictionary, click the **Use Data Dictionary** radio button, select the name of the data dictionary from the dropdown list, and then click the **Select Record** button. This will display you the *Select Record* screen (see Figure 222).

Figure 222: Select Data Dictionary
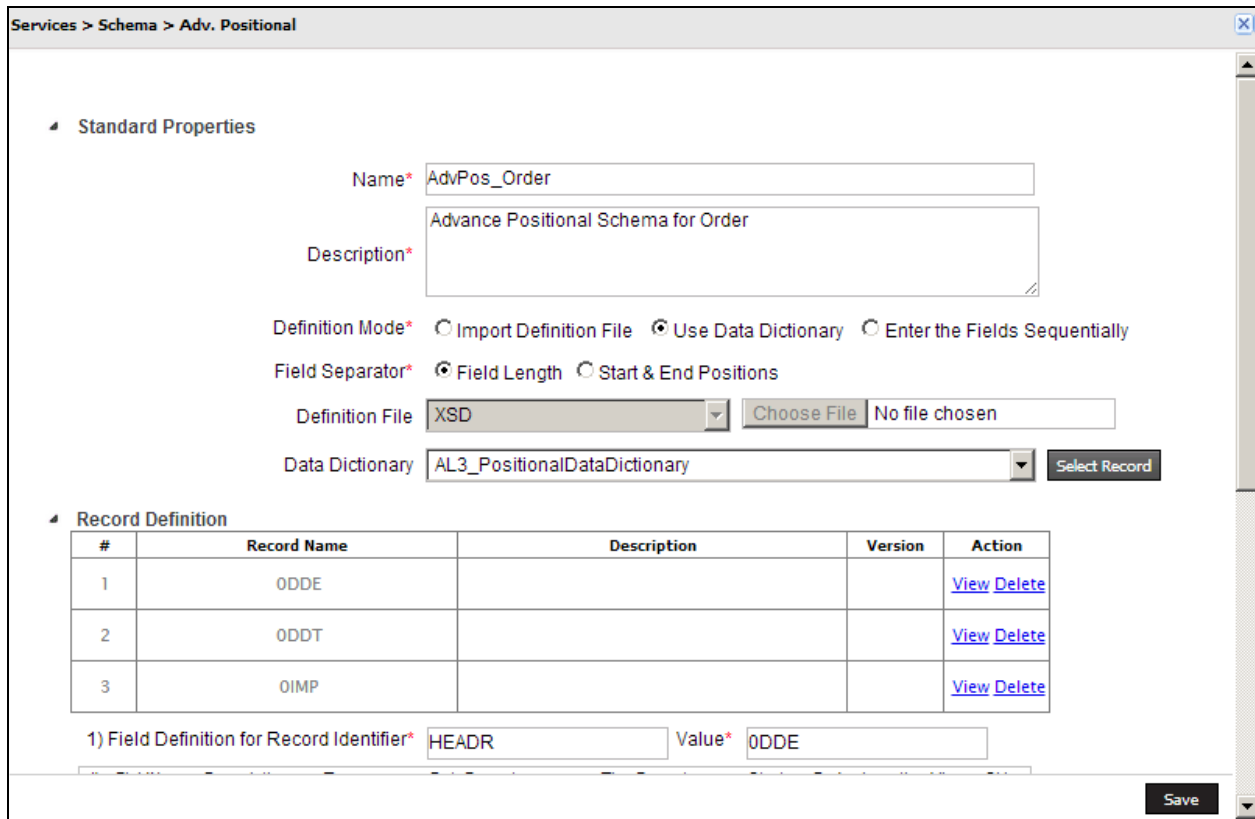
> **i** To know, how to create Data Dictionary, refer to the Creating Data Dictionary section.

7. This screen will display you the name of the data dictionary and a list of all the records that are in the dictionary. Select the checkbox against the record that you want to display in the Advance Positional schema.

> **i** To display all records, select the **Select All** checkbox.

8. Click **OK**. This closes the *Select Record* screen and displays the selected records under Record Definition on the *Manage Advance Positional Schema* screen (see Figure 223). You can view or delete a record from this screen by clicking the appropriate button for that record.

Figure 223: Create Record Definition using Data Dictionary

9. To enter the fields manually, select the **Enter the Fields Sequentially Using** radio button and then click **Record Definition**.

    This action will further expand to display the Record Definition fields (see Figure 224).

Figure 224: Create Record Definition

10. Enter the name and description of the field in the **FieldName** and **Description** textboxes respectively.

11. Select the type of data from the **Type** dropdown list. For data type selection, please refer to Table 2.

12. If data type is **Date**, select the format of date and time from the **DateFormat** and **TimeFormat** dropdown lists respectively.

13. To define field position select one of the following options:

    - Field Length
    - Start & End Positions

14. To define the field position using field length, select the **Field Length** radio button and then enter the length of the field in the **Length** field.

15. To define the field position using start and end position, select the **Start & End Position** radio buttons.

16. Enter the start position of the field in the **Start** textbox.

17. Enter the end position of the field in the **End** textbox.

> The starting position of a row in a positional file is 1.
>
> In a positional file, the schema counts a tab as one position and not eight positions.
>
> By default, the schema creates these field positions in a sequence. You can also create a schema with fields that are not in sequence. For details, refer to the *Defining Field Positions Non-Sequentially*
>
> section.

18. Select the alignment of the field from the **Align** dropdown list.

> From **Align** select
>
> > **L** if the field is left aligned.
> >
> > **R** if the field is right aligned.
>
> To insert rows, specify the number and position of the rows that you want to add in the *Number of Rows* and at *Position* fields respectively and then click the **Add Row** button. You can add a maximum of 99 rows at a time.

19. Select the **Skip** checkbox if you want to skip some fields while generating the XML for your schema. For example, your source file has over 1500 fields, but you only need to use 1000 fields. This **Skip** checkbox will omit the 500 unrequired fields and it will not read them when it parses the data to XML. However the fields will be visible in the file. If you create the schema using an existing XSD, then the skipped fields will appear blank. However, when you will use the same schema in other activities such as Mapping, it will display all the fields of the file.

> The skipping of fields is useful in case where a standard XSD has a large number of fields. Skipping reduces the size of the XML which will now contain the fields that we require.
>
> While editing an existing schema, the field file that you will download, the Adeptia Suite will represent the skipped fields by 'T' and the unskipped fields by 'F' (see Figure 225). This depiction will remain the same while viewing the Print-Friendly Page.

Download AdvancePositionalSchema Definition File AdvancePositionalSchema Name:
AdvPos_Order

Select Definition File [XSD ▼]

xsd	`<?xml version="1.0" encoding="ISO-8859-1"?>`
	`<!-- W3C Schema generated by Adeptia Editor -->`
	`<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">`
	    `<xs:element name="Root">`
	`<xs:annotation><xs:appinfo><XsdType>Advanced</XsdType>`

Field	`Record_ID_Header:HDR,Record_ID_Party:PRT,Record_ID_Item:ITE`
	`HDR,Record_ID_Header,,string,,,1,3,L,F`
	`HDR,Order_ID,,string,,,4,23,L,F`
	`HDR,Order_date,,string,,,24,32,L,T`
	`HDR,RequestedDelivery_date,,string,,,33,41,L,T`

[Download] [Cancel]

Figure 225: Skipped and Unskipped Fields in the Data File

20. Enter the name of any field in the **Record Identifier** textbox and the value of the field in the **Value** textbox.

> ℹ️ Record Identifier is used to identify the records which will be parsed through this definiton. In **Value** you can also use regular expressions. To use regular expression enable **Is Regex.**

21. Click **Add Record** to define another set of data and repeat the steps from 6 to 20.

22. After defining records you need to define their hierarchy. This is mandatory for creating an Advance Positional schema.

23. Once you finish adding the records, defining the Record Identifiers, and their values, click the **Refresh** button under **Hierarchy Definition**.

This populates the Record Identifiers of the defined records, in the **Record ID** field under Hierarchy Definition (see Figure 226).
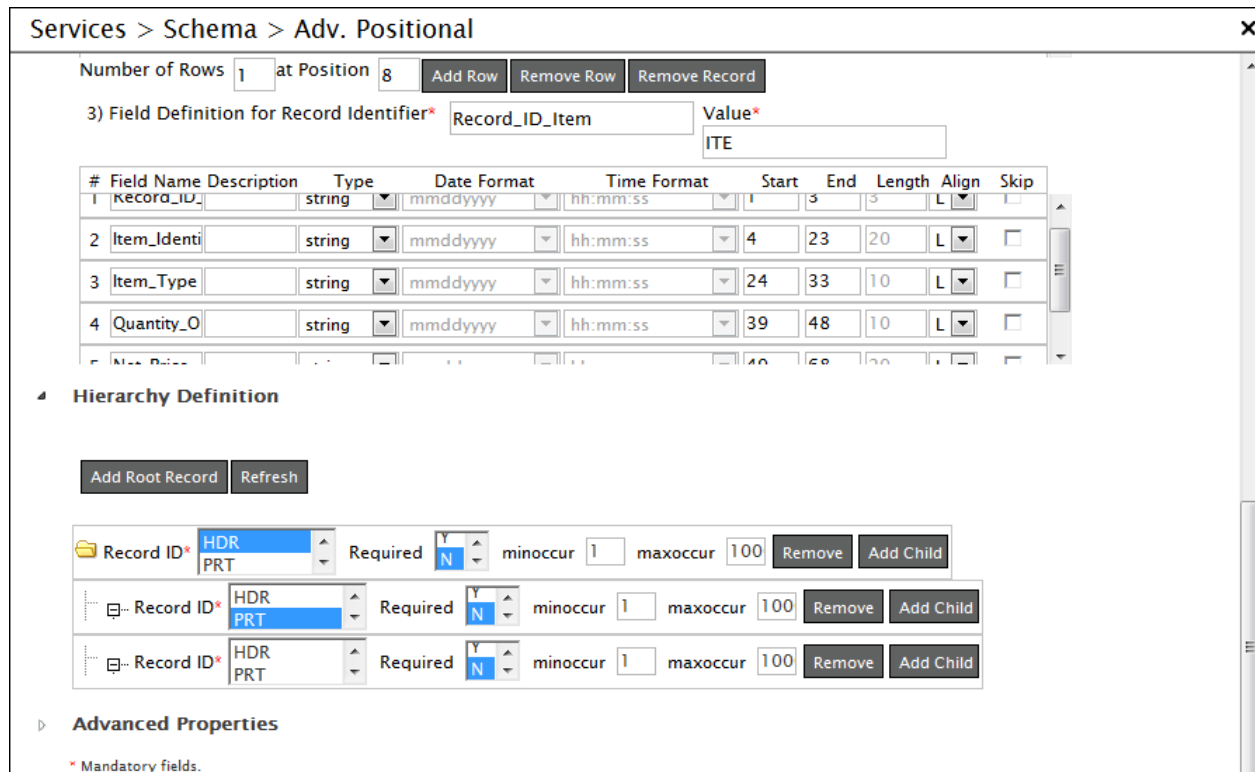
Figure 226: Create Record Hierarchy Definition

24. Select a record from the **Record ID** list box.

25. Select *Y* or *N* from the **Required** list box to indicate if a record will appear in the source file.

26. In the **minoccur** field, enter the minimum number of occurrences that you want a record to appear in the source file. If the **Required** field has the value as 'Y', then the **minoccur** field should at least have a minimum 1 occurrence in the source file. If the **Required** field has the value as 'N', then the **minoccur** field can be 0.

27. In the *maxoccur* field enter the maximum number of occurrences that you want a record to appear in the source file. The maximum allowable value that you can enter in the **maxoccur** field is 2147483647.

Using Hierarchy at Root Level

Steps to use a hierarchy at the Root Level

1. Click the **Add Root Record** button. This creates a record at the same level as that of the previous root record as shown in the figure (see Figure 227).

Figure 227: Create Root Record

2. Select a record from the **Record ID** field and enter all the related information.

3. Repeat step 24-27 to create another root record.

> ℹ️ Every record must have a unique Record ID. For example, if the first root record is *John* , then you need to select *Stationary* in the next root record.

Using Record at Child Level

Steps to use a record at the Child Level

1. Click the **Add Child** button. This creates a child record at a level below the Root record as shown in the figure (see Figure 228).

Figure 228: Create Child Record

2. Select a record in the **Record ID** field of the child record and enter all the related information.

3. Repeat step 24-27 to create a child record.

A parent and child record must have a unique Record ID in one hierarchy. For example, if *John* is the parent record, then you need to select *Stationary* as the child record. Similarly, if you create another child record under *Stationary*, then you need to select *North* as its Record ID (see Figure 229).

Figure 229: Create Another Child Record

You can remove a record by selecting the record and clicking the **Remove** button. This will display you a confirmation delete dialog box on clicking **OK** this action will delete the record.

Alternately, if you delete the last fieldname of a record and then save the schema, this action will delete the entire field. For example, a record has three fields – *Name*, *Description*, and *Age*. Now deleting *Age* will result in deletion of the entire field.

If a record has one or more child records then, deleting the parent record will result in deletion of all of its child records.

4. Click **Advanced Properties**. Advanced properties of an advance positional schema is shown below (see Figure 230).

Figure 230: Change Advanced Properties

5. Click the **Populate** button to view the XML code for the hierarchy you had just made.

    As this field is editable, you can edit or enter new XML code for the hierarchy and this code will then override the existing hierarchy. In case there are numerous records then, you can create a flat hierarchy and edit that XML code to change the hierarchy as per your wish.

    > We recommend you to copy this XML code, edit it in another XML editor, and then make any changes. Once you are done with the changes, you can paste it into the **Hierarchy XML** field. Once you update the XML code, you should not click the **Populate** button again or make any changes to the Hierarchy, as these actions will then replace your XML code with the original XMLcode.

6. If the source file does not have any carriage return then disable the **Handle CR/LF (Source Data)** checkbox.

    By default, this option is checked, as the schema expects a file with carriage return. This option is applicable only if you are using the schema at the source end.

7. Enter the record separator for the target records in the **Target Record Separator** textbox.

8. If you want to pass a specific length of data and ignore the rest of the data then you can select the **Data Truncation** checkbox.

9. If you want that the target record identifier in XML should match with the value specified in the schema then you need to select the **Validate Target Record Identifier** checkbox.

    By default, this checkbox is unchecked. This means that if the Record Identifier Value is not exactly same, then it will not generate error records.

10. If you want to parse the data even if the number of fields in the data file are less than the number of fields specified in the schema then, select the **Allow Less Fields** checkbox.

    If you use the schema at the source end and check the **Allow Less Fields** checkbox then the schema will parse the input data and insert the empty tag for missing fields. If you use the schema at the target end then, the schema will write all the incoming tags in XML as input.

11. If you want to generate error records when the number of fields in the source data is more than the number of fields specified in the schema then, uncheck the **Allow More Fields** checkbox.

    If this checkbox is checked then your Process Flow will only parse those fields that you specify in your schema. It will ignore all the other fields.

12. You can filter the invalid XML characters by selecting the **Filter Invalid XML Characters** checkbox. If you want to prevent the abortion of the mapping process due to the invalid XML characters then this checkbox will help you achieve that.

    > **i** To learn about other Advanced Properties refer to the Changing Advanced Properties section.

13. Click the **Save** button.

Defining Field Positions Non-Sequentially

By default, XML creates the fields of a schema sequentially. At times, you may need to create a schema with field positions that are not in sequence. For example, there are 500 fields in the source file and you need to create a schema by using only 200 fields. But these 200 fields are not sequential. In such a case, you can create a schema by defining the start and end position of these fields in a non-sequential manner.

Steps to define field positions non-sequentially

1. Click the **Start & End Positions** radio button.

2. Enter the name and description of the field in the **FieldName** and **Description** textboxes respectively.

3. Select the type of data from the **Type** dropdown list.

4. The default value of the start position in the **Start** field is 1. You can edit the start position as per your requirement.

5. Enter the end position of the field in the **End** field after which you want to create a field position that is not in sequence.

6. In the next **Start** field, you can define a new start position for this field. For example, if the field that you made has 1 and 10 in the **Start** and **End** field respectively, so now you can define a start position (other than 11) such as 15 and the end position such as 25 for this new field that you are creating.

    This implies that, when you create a schema, field1 will have 10 positions. However, field2 will start at the 15th position. The positions between 11 and 14 will remain blank.

    > **i** You can also change the field positions non-sequentially, while editing the schema.
    > This feature is available for Advance Positional and Positional Schemas only.

Viewing Print Page

You can view the summary, record definition, and hierarchies of a schema in edit mode.

Steps to view Print page

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** ➔ **Schema** and then click **Adv. Positional**.

    The **Manage Advance Positional Schema** screen is displayed (refer to Figure 221).

3. Click the schema to view it in Edit mode or click the **More Actions** icon under the *Actions* column and select the **View** option.

Clicking this link will display you the **Edit Advance Positional Schema** screen (see Figure 231).

Figure 231: Edit Advance Positional Schema

4. Click the **Print** button. This action will display you the *Summary* screen (see Figure 232).

Advance Positional Schema Name: AdvPos_Order

1) Record Identifier Name = Record_ID_Header, Record Identifier Value = HDR

FieldName	Description	Type	DateFormat	TimeFormat	StartPos	EndPos	Length	Alignment	Skip
Record_ID_Header		string			1	3	3	L	F
Order_ID		string			4	23	20	L	F
Order_date		string			24	32	9	L	F
RequestedDelivery_date		string			33	41	9	L	F
Customer_Detail_Reference		string			42	56	15	L	T
Currency_Detail		string			57	71	15	L	T

2) Record Identifier Name = Record_ID_Party, Record Identifier Value = PRT

FieldName	Description	Type	DateFormat	TimeFormat	StartPos	EndPos	Length	Alignment	Skip
Record_ID_Party		string			1	3	3	L	F
Party_ID		string			4	18	15	L	F
Party_Type		string			19	38	20	L	T
Party_Address		string			39	63	25	L	F
Party_City		string			64	78	15	L	F
Party_Postal		string			79	93	15	L	F
Party_Country		string			94	108	15	L	F

Figure 232: Print-Friendly Page

> **i** You can print a summary of the EDI segment definition and hierarchies too.
>
> Similarly, you can view the Print-friendly page for the Positional Data Dictionary, by clicking the **Print-friendly Page** button on the *Edit Positional Data Dictionary* screen.

Special Usage Scenario

Enable IsRemoveHeader Attribute

If you use Advance Positional schema as a target schema then, you can set the *IsRemoveHeader* attribute. This attribute will help you to skip the insertion/updation of a record from the source file to the target database. You only need to set the *IsRemoveHeader* attribute to 'True'. This attribute is set in the Data Mapper, while mapping source and target schemas.

Steps to set IsRemoveHeader attribute

In the Data Mapper, load the source and target schemas. In the target schema, there is an *IsRemoveHeader* attribute.

1. Create a constant that has a value 'true' and map it to IsRemoveHeader attribute of the target schema.

2. Save the Mapping activity.

> To learn how to use Data Mapper, refer to the Using Data Mapper section.

CREATING ADVANCE TEXT SCHEMA ACTIVITY

You can use this to schema activity to define how to read data from and write data to an advance text file. An advance text file refers to a text file which can have multiple record formats and field separators.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Figure 233 displays a sample Advanced Text file.

12345678D 07/12/2007 XYZ SYSTEMS, INC. 443 NORTH CLARK AVE, SUITE 350 CHICAGO, IL 60610
Agent: JOHN SMITH 443 NORTH CLARK AVE, SUITE 350 CHICAGO, IL 60610
Officer: JOHN SMITH 443 NORTH CLARK AVE, SUITE 350 CHICAGO, IL 60610
56789101D 07/16/2007 XYZ INTERNATIONAL INC 443 NORTH CLARK AVE, SUITE 350 CHICAGO, IL 60610
Agent: NICK MASSA 443 NORTH CLARK AVE, SUITE 350 CHICAGO, IL 60610
Officer: NICK MASSA 443 NORTH CLARK AVE, SUITE 350 CHICAGO, IL 60610

Figure 233: Sample Advanced Text File

In the Figure 233 there are three types of records. The first field of all record is considered as the *Record Identifier*. In this example, the record identifier of the first record is an eight-digit number followed by a character 'D' (e.g. *12345678D*). It could be any number followed by 'D'. The second and third record identifiers are for *Agent* and *Officer* respectively. In this text file, there are two field separators ':' colon and space.

Steps to create Advance Text Schema

1. On the Adeptia Suite homepage, go to **Configure → Services → Schema** and then click **Adv. Text**.

    This action will display you the *Manage Adv. Text Schema* screen (see Figure 234).

Figure 234: Manage Advance Text Schema

2. Click the **Create New** link. This action will display you the *Create Advance Text Schema* screen (see Figure 235).

Figure 235: Create Advance Text Schema

3. Enter the name and description of the new Advance Text schema activity in the **Name** and **Description** textboxes respectively.

4. . To separate the different records of an advance text file, you need to enter a value in the record separator. For example, \n for new line and \s for space.

5. . To separate the different fields of a text file, you need to enter a value in the Field Separator. For example, \t for Tab and \s for space.

> • You can specify multiple record and field separators. You can also use regular expressions to specify field separators. For example, you can use "\s|:" to specify space or colon (:) as a field separator.
>
> • You cannot directly use special characters such as '+', '*', or '|' in your regular expression as field separators. To use them you need to put these characters within square brackets in the **Field Separator** field. For example, [+], [*] or [|].
>
> • However, if you use the same schema at the target end, in a target data file then the schema will print the field separator along with the square brackets. To avoid this, enter '+', '*', or '|' in the **Target Field Separator** field in *Advanced Properties*.
>
> • You can also use hex values in record and field separators.
>   ▪ As field separator at target end, use **0x** before the value. For example, for **space** as field separator use **0x20**.

> ▪ As field separator at source end, use as regular expression. For example, for **space** as field separate or use **\x20 .**
>
> ▪ Record separator uses regular expression to support hex values at both source and target end. For example, for **space** as a record separator, use **0x20** .
>
> • You can also specify two hex values together in record and field separator. For example, for two **spaces** you need to use **0x200x20**.

6. To define schema definition, select one of the following options:

    - Use Definition File
    - Enter the Fields Sequentially

7. To define the schema using definition file, select the **Use Definition File** radio button, select the type of file from the dropdown list, and click the **Browse** button to select a file that you want.

8. To enter the fields sequentially, select the **Enter the Fields Sequentially** radio button and click **Record Definition**. This will display you the **Record Definition** fields.

9. Enter the record identifier in the **Record Identifier** textbox. You can also use a regular expression in this textbox.

10. Enter a name in the **FieldName** textbox.

11. In the **Match Pattern** textbox, enter the pattern against which you want to match the record.

> ℹ️ You can use regular expression in the **Match Pattern** textbox. For example, if in the data file there is a Company Name field that can have value like **XYZ SYSTEMS, INC**. Since you can use **\S** as a field separator, the schema will consider **XYZ, SYSTEM,** and **INC** as separate fields. But they need to be a part of the same field. To parse this type of data, you can enter `\S+ .*` `(INC\.|INC(ORPORATED)?)` in the **Match Pattern** textbox. This pattern matches the fields that have spaces and end with INC. or INCORPORATED.

12. Enter a particular pattern that you want to skip in the **Skip Pattern** textbox. You can also use regular expression in this textbox.

13. If you want to parse the data even if the number of fields in the data file are less than the number of fields specified in the schema then check the **Allow Less Fields** checkbox.

> ℹ️ You should use the **Allow Less Fields** feature only in a source-end schema as it will not work in a target-end schema.

14. Enter the minimum and maximum size of the field in the **Min Size** and **Max Size** textboxes respectively.

15. Enter the position in the **Position** textbox.

16. Click the **Add Record** button to define another type of record format and follow the steps from 10 to 15.

> ℹ️ For adding more fields in the same record format, click the **Add Row** button.
> Specify the number and position of the rows that you want to add, in the *Number of Rows* and *Position* fields respectively and click the **Add Row** button to insert rows. You can add a

maximum of 99 rows at a time.

Advance text schema supports only `String` data type.

To learn about *Advanced Properties* refer to the [Changing Advanced Properties](#) section.

You can enable quotes handling, by checking the **Quotes Handling on** checkbox in the Advanced Properties.

For example, if there is a field data record, "Chocolate20perpack" and you set a field separator as $ then the schema will ignore the $ even though it's a part of the data.
To avoid such situations you need to put that field within double quote like this, (Chocolate"$"20$perpack").

When you use **Quotes Handling on** in a schema then regular expression does not work on any field.

The header contains the information about the different record structure of the text file. You may not want to send the header information to the target. To do this, you need to check the **Ignore Header** checkbox in *Advanced Properties*. You can use this property only when you use a schema at the source end. This property is not applicable at a when you use it at a target end schema.

If there are multiple record separators in an input file, then to parse this input file, you need to check the **Look Ahead** checkbox in the *Advanced Properties*.

At times, the input data may contain some characters that are invalid in XML, this results in the abortion of the mapping process. You can filter these invalid XML characters by checking the **Filter Invalid XML Characters** checkbox in *Advanced Properties*.

17. After defining records you need to define their hierarchy. This is mandatory for creating an Advance Text schema.

18. Once you finish adding the records and defining their record identifiers, click the **Refresh** button under the **Hierarchy Definition**.

This action will populate the record identifiers in the *Record ID* field (see Figure 236).

Figure 236: Create Record Hierarchy Definition

19. Select a record from the **Record ID** list box.

20. Select *Y* or *N* from the **required** list box, to indicate if you want the current record to be present in the source file.

21. In the **minoccur** field, enter the minimum number of occurrences of the current record that you want in the source file,. The minimum allowable value is 1.

22. In the **maxoccur** field, enter the maximum number of occurrences of the current record that you want in the source file,. The maximum allowable value is 2147483647.

You can now create a record either at the root level or at the child level.

Using Record at Root Level

Steps to use a Record at the Root Level

1. Click the **Add Root Record** button. This action will create a record at the same level as that of the current record.

2. Select a record from the **Record ID** field of the current record and enter all the information.

3. Select a record from the **Record ID** list box of the root record and repeat step 1-2 to create another root Record.

> **i** Each root Record must have a unique Record ID. For example, if you select *[0-9][8,8]+[D]* as the first root record, then you need to select *Agent* in the next root record.

Using Record at Child Level

To create a record at the Child Level

1. Click the **Add Child** button. This creates a record at a level below that of the current record (see Figure 237).
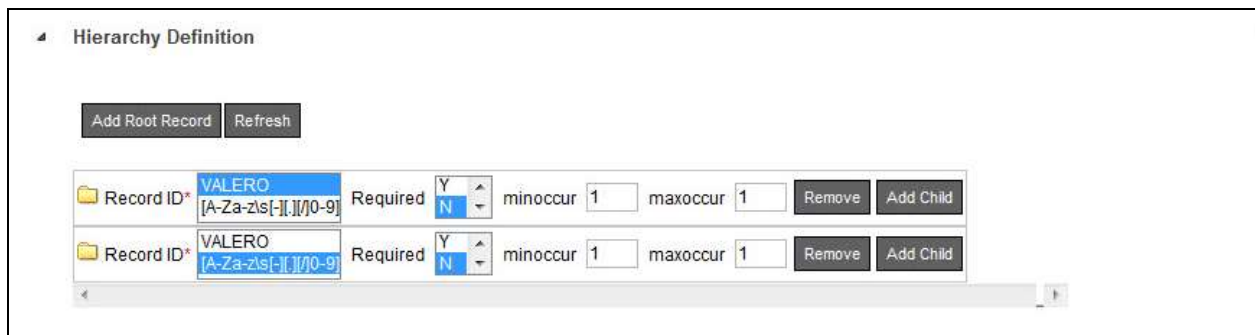
Figure 237: Create Child Record

2. Select a record in the **Record ID** list box of the current record and enter all the information.

3. Select a record from the **Record ID** list box of the root record and repeat step 1-2to create a child record.

> **i** A parent and child record must have a unique Record ID in one hierarchy. For example, if you select *[0-9][8,8]+[D]* as the parent record, then you need to select *Agent* as the child record. Similarly, if you create another child record under *Agent*, then you need to select *Officer* as its Record ID (see Figure 238).
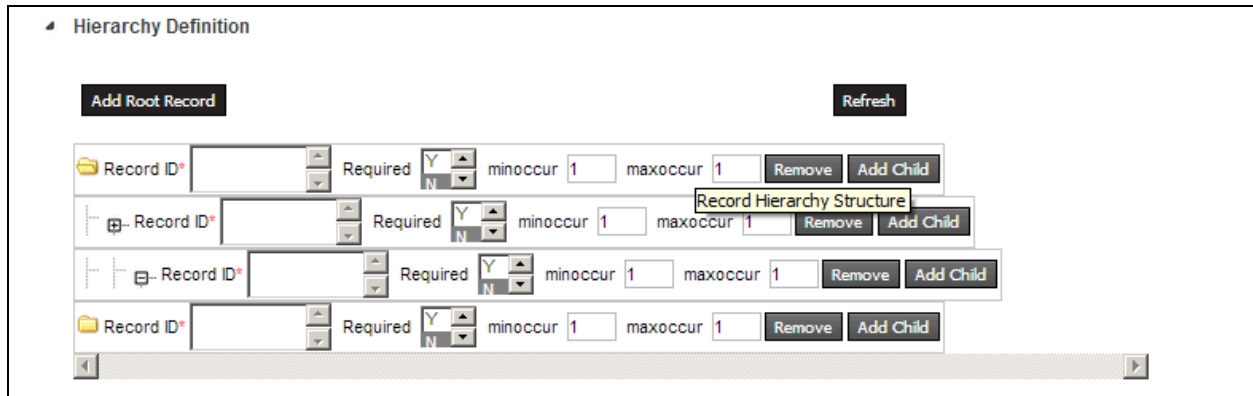
Figure 238: Create Another Child Record

> ℹ️ Select a record and click the **Remove** button to remove it. This will display a confirmation delete message, click **OK** to delete the record.
>
> Alternately, if you delete the last fieldname of a record and then save the schema, this action will delete the entire field. For example, a record has three fields – *Name, Description*, and *Age*. If you delete *Age*, save the schema, this action will delete the entire field.
>
> If a record has one or more child record, deleting the parent record will delete all its child record too.

4.   Click the **Save** button. .

CREATING DATABASE SCHEMA ACTIVITY

The Database Schema Activity defines the procedure to `insert`, `update`, or `delete` data to and from a database table. It uses the predefined *Database Info* activity to connect to the database.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisites

- You must create *Database Info* activity before you create *Database Schema* activity.

Steps to create Database Schema

1.   On the Adeptia Suite homepage, click the **Develop** tab.

2.   Go to **Services → Schema** and then click **Database**.

The action will show you the *Manage Database Schema* screen (see Figure 239).

Figure 239: Manage Database Schema

3.   Click the **Create New** link. This action will show you the **Create Database Schema** screen.

4.   Enter the name and description for the new database schema in the **Name** and **Description** textboxes respectively.

5. Select the database info activity from the **Select Database Info** drop-down list or click the **Create New** button to create a new database info activity (see Figure 240).

Figure 240: Create Database Schema

> To learn how to create Database Info activity, refer to the section *Creating Database Info* in the *Administrator Guide*.

6. To define schema definition, select one of the following options:

   - Use XSD File
   - Table Name

7. To select the XSD file, which contains schema information, click the **Choose File** button.

8. To define schema using a database table, select the **Table Name** radio button and click the **Browse Tables** button.

9. This action will show you the *Select Schema* screen that has the list of RDBMS Schemas, in case of *SQL Server* and *DBO* Database Info (see Figure 241).
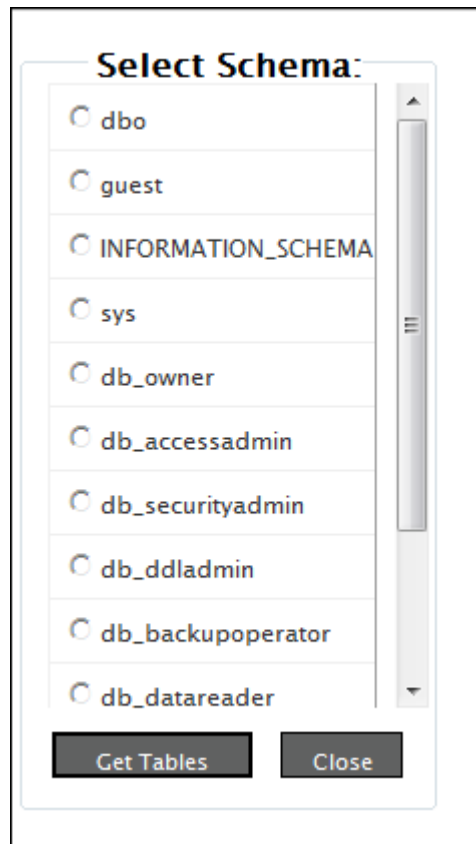
Figure 241: Select Schema

10. On the *Select Schema* screen, select the required RDBMS schema and click the **Get Tables** button. This action will show you the **Select Table** screen with a list of database tables (see Figure 242).
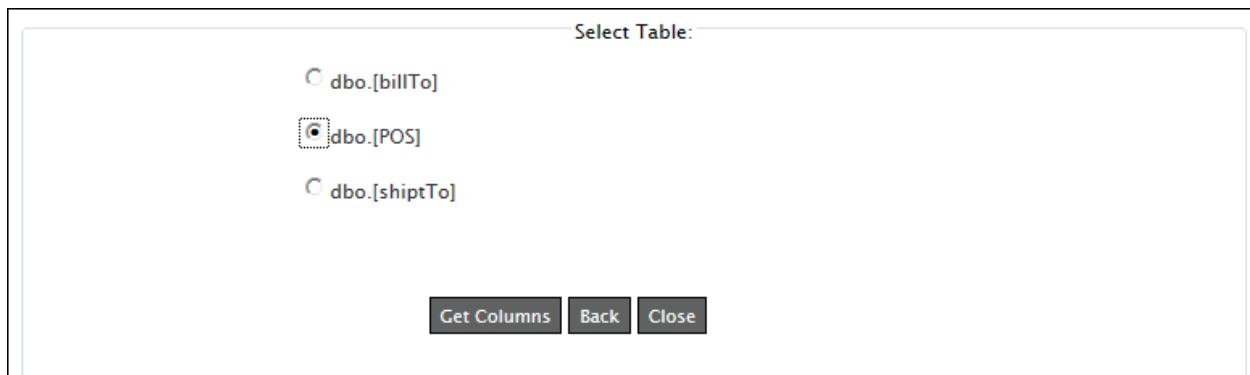
Figure 242: Select Tables

> If you want to go back from the *Select Table* screen to the *Select Schema* screen then, click the **Close** button.
>
> If the schema and its tables are created on *DB2*, then you need to remember that the schema name in *DB2* is case-sensitive. Else, it will display the same table more than once.

11. Select the table that you want and click the **Get Columns** button, this action will show you the **Select Table Column(s)** screen. This screen has a list of columns and their data types, along with the data format. The data format can be encrypted or plaintext (see Figure 243).

Figure 243: Select Table Column(s)

12. Click the **Select All** link to get the `select` query for all the columns or click on individual column names to get the `select` query of only those columns in the text field. You can also specify the `where` clause in the `select` query.

> ℹ️ The column name should not include any special character (except $ and SID#) or reserved SQL keyword (for example, *Identity*) as then the schema will generate an error when you will use it at the source or target end database.

13. Select the mode of data in the column, whether *Encrypted* or *Plain Text* from the dropdown list. If you use this schema at the source end and you are getting encrypted data then, select *Encrypted* from the dropdown list. Similarly, if you use this schema at the target end and you want to send encrypted data then, select *Encrypted* from the dropdown list.

> **i**
> - If you select *Encrypted* in table column, you must select *Encryption/Decryption secret key* from the Advanced Properties.
> - If you select *Encrypted* then the encrypted data length can be more than the source data length. In this case, you must define the target table column length more than the corresponding source table column length.
> - If you select *Encrypted* in table column, you must set the *Data Action* property in Process Designer, while creating the process flow. To know more about Process Designer, refer to the [Working with Process Flow](#) section.

14. Click **OK** to return to the **Database Schema** screen. This action will generate an editable `select` query in the **SQL Query** field.

> **i**
> - When you click the **Save** button, the schema will validate this query before saving it.
> - In case you use some SQL function or perform some calculation over the Column Name(s), use the alias name for that Column Name(s).
>   > For example, for query like:
>   > *SELECT SID,Name+Dept,Salary FROM dbo.Employee*
>   > You can use:
>   > *SELECT SID, (Name+Dept) as AliasName,Salary FROM dbo.Employee*
>   > Reason:
>   > While getting the result set, you have to assign the output of
>   > (Name+Dept) to some new field.

15. Enter the name of the primary key in the **Primary Key** textbox. Primary Key is the name of the field on the basis of which the schema updates the target database table. Primary Key is only used, when the database schema is used with database target. You can use Primary Key only when you are using database schema activity as target database.

16. Click **Advanced Properties** to view the advanced properties of the Database Schema(see Figure 244).

Figure 244: Advanced Properties of Database Schema

17. To enable the query batch update, check the **Query Batch Update** checkbox and enter the batch size in the **Query Batch Size** field.

> Enabling the **Query Batch Update** checkbox leads to database updation in batches as per the positive value set in the **Query Update Batch Size** field.
>
> For example, setting a value '10' in the **Query Update Batch Size** field will group 10 separate statements and submit them as a single batch. However setting the value to '0' will disable the batch execution and execution of every statement will occur simultaneously.
>
> You can achieve performance optimization by using batch update. The advantage of batch update is to reduce the network calls to the database by not executing every single SQL query when they are raised. By using this feature, you can send multiple queries to the database in a single instant and thereby reducing the number of JDBC calls and improving performance.
>
> This feature is available for the `Insert` and `Update` operation only.

18. Enter the number of statements that you want to commit to the database in a single instance, in the **Commit Count** textbox.

> When you set the commit count value to a positive integer value then the schema starts and commits a batch of transaction as per the number in the **Commit Count** textbox. This helps in reducing the network traffic and in turn increases network performance. This is called as batch transaction.

19. Check the **Use NoLock Option** checkbox to enable the no lock option. When you enable this option, the database schema will be able to read the data from the database table even if the database table is locked.

20. When you check the **Update Empty Tag** option then, an empty tag, such as <id/>, in the input XML file to the target database is handled as given below:

Number Type	:	updated to null value
Date Type	:	updated to null value
String type	:	updated to empty value

> **i** To learn more about the Advanced Properties refer to the Changing Advanced Properties section.

21. On the Database Schema screen, click the **Save** button.

Special Usage Scenario

Delete Target Records

In a Database schema, you can set the *Action* attribute to delete the records from the target database table, if they are matching with the records of the source database table. If you define a primary key in the source and target schemas then the Data Mapper will match the source and target records on the basis of the primary key. If you do not define a primary key then the Data Mapper will match all of the records. You can enable this attribute in Data Mapper while mapping source and target schemas.

Steps to set action attribute to delete matching records

Load the source and target schemas in the Data Mapper. In target schema, there will be an *Action* attribute.

1. Create a constant *'delete'* and map it to the *Action* attribute of the target schema.

> **i** You need to use the keyword "delete" if your target database is ORACLE, IBM DB2, MS SQL Server or HSQLDB. You can also use the "cancel" keyword for MS SQL Server DBMS to achieve the same functionality. However please note that, you cannot use the "cancel" keyword for other RDBMS except for Ms SQL Server.

2. Save the mapping activity.

> **i** To learn how to use Data Mapper, refer to the Using Data Mapper section.

CREATING EXCEL SCHEMA ACTIVITY

You can use an Excel Schema activity to define how to read data from and write data to an Excel file. To do so, you need to specify the name of the Excel sheet and enter data in the required fields, to enable identification of those fields.

While creating an Excel Schema you can also define hierarchy (parent-child relationship) between the records. You can define a parent-child relationship only when you create the schema susing data file.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create Excel Schema

1. On the homepage menu, click the **Develop** tab.

2. Go to → **Services** → **Schema**, and then click **Excel**. This action displays you the *Manage Excel Schema* screen (see Figure 245).

Figure 245: Manage Excel Schema

3. Click the **Create New** link. This action displays you the **Create Excel Schema** screen.

4. Enter the name and description of new excel schema in the textboxes **Name** and **Description** fields respectively.

5. Enable the **Secure** checkbox if the excel file that you are using to create schema is a password protected file.

6. Enter the password for the protected excel file and confirm it.

7. Data Header usually contains the name of the fields in an excel file. If schema is used at source end, and data header is present in the file, select the **Data Header Present** checkbox.

13. If the schema is used at the target end, and the **Data Header Present** checkbox is checked, the Header will be written in the target excel file (see

Figure 246).

Figure 246: Create Excel Schema

> Name of the Headers in the data file and the Field Names in schema must be same and in same order. If they are not same, then you need to use Dynamic Header Support option. To know how to use Dynamic Header Support, refer to the Using Dynamic Header Support section.

8. To define the schema using definition file, select the **Import Definition File** radio button; select the type of file from the dropdown list **File Definition** and click the **Upload File** button to select the required file. The **Schema File Upload** screen is shown (see Figure 247).

Figure 247: Upload file

9. Click **Browse** and select the file, you want to upload. Path of the selected file is shown in the **Browse File** field.

10. Now click **Upload File** button. Name of the uploaded file is shown in the **File Name** list and list of sheets of the excel file is shown (see Figure 248).

Figure 248: Specify Start Row and Start Column No.

11. Specify the Start Row No. and Start Column No. of the sheets in respective fields and then click *Process Sheet(s)*. This will read the sheets and field names.

> The Start Row No. and Start Column No. fields specify the row and column from where the Adeptia Suite starts fetching the data. For example if you have an excel file in which first 4 rows of sheet1 are blank. Therefore, in that case you have to specify 5 in sheet1 *Start Row No.* Another scenario can be that the data is there in first 4 rows, but you do not want to fetch those records.

12. Once the processing is done, click **Finish** to close the **Schema File Upload** screen and return to create schema page.

13. Select the sheet name of the excel file for which you are creating this schema activity, from the dropdown list **Sheet Name**. Fields of the selected sheet are populated.

14. If you want to create schema by entering the fields manually, select **Enter the Fields Sequentially** radio button and follow the steps given below:

   a) Enter the sheet name of the excel file in the textbox **Sheet Name**.

   b) Enter the name of each field in the textbox **Field Name**.

   c) Select the type of data from the dropdown list **Type**. The data types supported by Excel schema are listed in the table below.

Table 2: Supported Data types

Data Type	Description
String	Select this data type if the field accepts a string value.
Number	Select this data type if the field accepts a numeric value.
Date	Select this data type if the field accepts a Date or Date and Time value.
Currency	Select this data type if the field accepts a currency value.

> Excel Schema supports the Currency data type.

d) If data type is *Date*, select the format of date and time from the dropdown lists **Format** and **SubFormat** respectively.

> In case you define a date format in any column of the Excel file then, please ensure that every row of that column should have the same definition of date format as in the first row otherwise the Excel schema generates an error record.
>
> In case, you select a date format as *3/14/2001*, and use the schema at the source end then, the Excel schema parses the date as per the local date format. The Adeptia Suite does not support this date format when you use the schema at the target end.
>
> You should define the time format as *hh:mm:ss*.

e) If you select the *Currency* data type then, you need to select the required currency from the *Format* dropdown list. The currencies supported by excel schema are listed below:

- Dollar($)
- USD
- CAD
- CNY
- EUR
- GBP
- JPY

f) Select the mode of data, whether *Encrypted* or *Plain Text* from the dropdown list **Data Mode**. If the schema is used at source end and encrypted data is coming from the source, select *Encrypted* from the dropdown list **Data Mode**. Similarly if the schema is used at the target end and you want to send the encrypted data to the target, select *Encrypted* from the *Data Mode* dropdown list.

> - If you select Encrypted in the Data Mode then, you must select *Encryption/Decryption secret key* from the Advanced Properties.
> - If you select Encrypted in the Data Mode then, you must set the *Data Action* property

> in the Process Designer, while creating the process flow. To know more about Process Designer, refer to the Working with Process Flow section.
>
> - To insert rows, you need to specify the number and position of the rows that you want to add in the *Number of Rows* and at *Position* fields respectively and then click on the **Add Row** button. You can add a maximum of 99 rows at a time.
>
> - To remove rows, you need to specify the number and position of the rows that you want to delete in the *Number of Rows* and at *Position* fields respectively and then click on the **Remove Row** button.

> ℹ️ If you delete the last fieldname of a record and save the schema, this action will delete the entire field. For example, a record has three fields – *Name, Description*, and *Age*. If you delete *Age* then, the schema will delete the entire field.

g) Click **Advanced Properties**. The following screen is displayed (see Figure 249).

Figure 249: View Advanced Properties of Excel Schema

h) Enter the Row Start Position in the **Row Start Position** field. Row Start Position specifies which row of the Excel Sheet is counted as first row. For example if you entered 5 in the Row Start Position field, 5th row of the Excel Sheet is counted as first row. If this schema is used at source end, the data form 5th row onwards is taken for processing. If this schema is used at target end, data is copied into the 5th row onwards. From 1st to 4th row of the target excel sheet will remain blank.

i) Similarly, enter the Column Start Position in the **Column Start Position** field.

j) If you want to enable Dynamic Header Support, select the **Dynamic Header Support** checkbox. For detailed information about Dynamic Header Support refer to the section **Using Dynamic Header Support**.

k) In case the number of fields in the data file is less than the number of fields defined in schema, you need to enable the **Allow Less Fields** checkbox to process the data.

> • When the number of fields in the data file are less than the number of fields defined in the schema then, the schema does not processes the data and gives an error during execution.
> • If you still want to process the data, then you need to enable *Allow Less Field* checkbox.
> • When you enable the *Allow Less Field* option then, the schema generates an empty tag for fields that are not present in the data file.
> • This option is applicable only when you use the schema at source end.

l) In case the input data contains some characters that are invalid in XML, then this may result in the mapping getting aborted. You can filter these invalid XML characters by checking the *Filter Invalid XML Characters* checkbox.

m) Similarly, if the data contains blank rows, you can filter them by checking the *Filter Blank Row(s)* checkbox. This option is applicable only when you use the schema at source end. By default it remains unchecked

n) If you want to remove enclosing characters (e.g. ' , " , < , >) from the data file while parsing, enter the enclosing character that you want to remove, in Handle En*closing Character* field. Currently following enclosing characters are supported:

    i.   Single Quote (')

    ii. Double Quote (")

    iii. Less than symbol (<)

    iv. Greater than symbol (>)

o) If schema is used at target end and you want to convert the data from Plain Text to encrypted mode, select the secret key activity from the *Encryption Secret Key* dropdown list. The selected secret key activity is used to encrypt the data.

p) If schema is used at source end and you want to convert the data from Encrypted Mode to Plain Text, select the secret key activity from the *Decryption Secret Key* dropdown list. The selected secret activity is used to decrypt the data.

> To know, how to create secret key activity, refer to the *Creating Secret Key Activity* section in the *Administrator Guide*.
>
> To learn more about Advanced Properties refer to Changing Advanced Properties section.

q) Click the **Save** button.

Using Excel Schema to parse XLSX file

When you use excel schema to parse XLSX file, then you need to do some additional setting while creating process using this schema.

While creating the process flow, in Process Designer, double click the Excel schema that you are using in the process flow. Properties of the Excel Schema is displayed in the properties panel (see Figure 250)
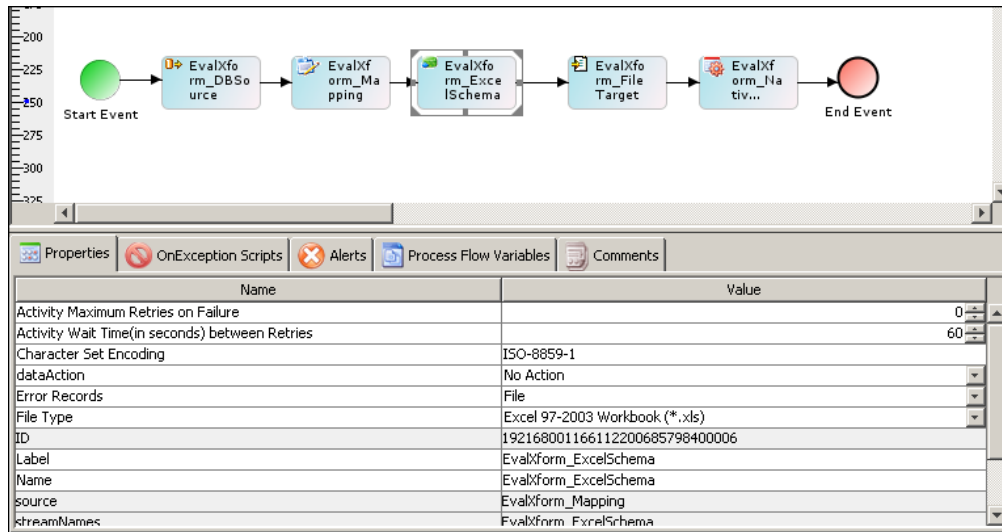
Figure 250: View Advanced Properties of Excel Schema

In value of File Type property, select Excel Workbook (*.xlsx).

When the value *File Type* property is set as *Excel Workbook (*.xlsx)*, this schema can parse both types of excel file: XLS as well as XLSX file.

Defining Field Hierarchy

You can define hierarchy (parent-child relationship) between the records of an excel file using *Define Hierarchy* option of excel schema. To understand how to define hierarchy let us assume that you have an excel file which contains records of insurance policies of families (see Figure 251).

ID	EMPFIRSTNAME	EMPLASTNAME	SSN	GENDER	DOB	ADDR1	ADDR2	CITY	STATE	COVERAGETYPE
7812	John	Smith	8989	M	4/11/1960	123 DummySt	Apt 12	Gowen	MI	1
	Mary	Smith	7871	F	1/1/1962	123 DummySt	Apt 12	Gowen	MI	1
	Kevin	Smith	1211	M	5/7/1989	89 Main St		Chicago	IL	4
2311	Larry	Johnson	8672	M	2/4/1967	123 DummySt	Apt 2A	Gowen	MI	1
	Samantha	Johnson	5430	F	11/8/1971	123 DummySt	Apt 2A	Gowen	MI	1
	Anna	Johnson	9231	F	9/10/1995	123 DummySt	Apt 2A	Gowen	MI	4
	Rea	Johnson	9231	F	3/15/1998	123 DummySt	Apt 2A	Gowen	MI	4

Figure 251: Policy Details

As you can see in figure 238, for ID 7812 there are three policies and similarly for ID 2311 there are four policies. While defining a schema, you can specify the criteria based on which the schema can define the hierarchy. For example you can select that if the ID field is blank, merge the record in the previous record, which is having ID. Similarly, you can define the criteria for the matching record. For example if value of the ID field is matching with that of the previous record, merge the record with the previous record.

Define Hierarchy option works only when you define the schema using data file.

Steps to define hierarchy

1. While creating schema, select the **Import Definition File** radio button and then select Data from the dropdown list.

2. Click the **Upload File** button. The **Schema File Upload** screen is displayed (refer to Figure 247).

3. Click **Browse** and select the file, you want to upload. Path of the selected file is shown in the textbox **Browse File**.

4. Now click **Upload File** button. Name of the uploaded file is shown in the **File Name** list and list of sheets of the excel file is shown (refer to Figure 248).

5. Specify the Start Row No. and Start Column No. of the sheets in respective fields and then click **Process Sheet(s)**. This will read the sheets and field names.

> **i** The Start Row No. and Start Column No. fields specify the row and column from where the schema should start fetching data. For example, if in an excel file the first 4 rows of sheet1 are blank and you want to exclude them from your selection then, you have to specify 5 in the *Start Row No*. field for sheet1. Similarly, there can be some data in the first 4 rows, but you do not want to fetch those records.

6. Once the processing is done, click **Finish** to close the **Schema File Upload** screen and return to create schema page.

7. Once the file is uploaded the **Sheet Name** field is converted into the dropdown list and all the sheet names of the selected excel file are populated in this dropdown list.

8. Select the sheet name from the dropdown list **Sheet Name**. All the fields of the selected sheet are populated.

9. To define the hierarchy, select the *Define Hierarchy* checkbox and select the merge criteria from the dropdown list **Merge Criteria**.

> **i** Currently two merge criteria are supported:
>
> **Matching Child Record**: The schema merges the records in case the values in the Key fields are matching.
>
> **Blank Child Record:** In case the value of the key field is blank then, the schema merges the record with a previous record whose key field is not blank.

10. Select the field name from the *Merge Key* dropdown list on basis of which record are merged.

11. Click **Save** to save the excel schema.

Using Dynamic Header Support

Dynamic Header is an advanced feature of Excel Schema, which it uses to parse an excel file, if:

FieldNames defined in the Excel Schema and the Data Headers (Column Name) of the excel file are same but not in same order.

FieldNames defined in the Excel Schema and the Headers of the excel file are not same. They may or may not be in same order.

Prerequisites

*   Data Header must be present in the Excel file

- Data Type must be same in the Excel Schema and the excel file

To parse an excel file, whose Headers are same but not in order with the FieldNames of the Excel Schema, check the Dynamic Header Support checkbox in the Advanced Properties. Now the Excel Schema will parse the data from the respective columns.

To parse an excel file, whose headers are different and not even in order with the fieldnames of the Excel Schema, check the *Dynamic Header Support* checkbox in the Advanced Properties. Apart from this an XML file is used by the schema, which contains the mapping between the headers of the excel file and the fieldnames of the Excel Schema. Following is the sample XML (see Figure 252).

```xml
<?xml version="1.0" encoding="ISO-8859-1"?>
<HeaderMap type="Name">
<Map>
<SchemaHeader>Name</SchemaHeader>
<DataFileHeader>EMP_Name</DataFileHeader>
</Map>
<Map>
<SchemaHeader>DOB</SchemaHeader>
<DataFileHeader>EMP_DOB</DataFileHeader>
</Map>
<Map>
<SchemaHeader>Age</SchemaHeader>
<DataFileHeader>EMP_Age</DataFileHeader>
</Map>
<Map>
<SchemaHeader>Address</SchemaHeader>
<DataFileHeader>EMP_Address</DataFileHeader>
</Map>
</HeaderMap>
```

Figure 252: XML to map Field Name with Data Header

where:

SchemaHeader is the *FieldName* defined in the Excel Schema.

DataFileHeader is the name of the *Header* in excel file.

Excel Schema reads this XML file from process flow context. Therefore, you have to pass this XML file to the process flow context. The following figure shows a sample process flow to depict this scenario:
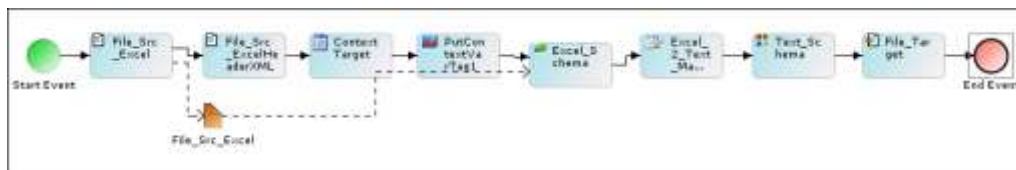
Figure 253: Sample Process Flow

In the process flow shown in Figure 253, a file source activity is used to read an excel file. An Excel Schema is used to parse the data from the excel file. FieldNames defined in the excel Schema and Headers in Excel file are different. To parse the data from the excel file, an XML file, which contains the mapping between FieldName and the Header is passed to the process flow context. To pass the XML file to process flow context, another File source activity *(File_Src_ExcelHeaderXML*) is used.

This file source activity reads the XML file from a specified location and passes it to the context target activity. In context Target activity, you need to define the value of the *parameterName* property. Figure 254 shows the properties of the Context Target activity.
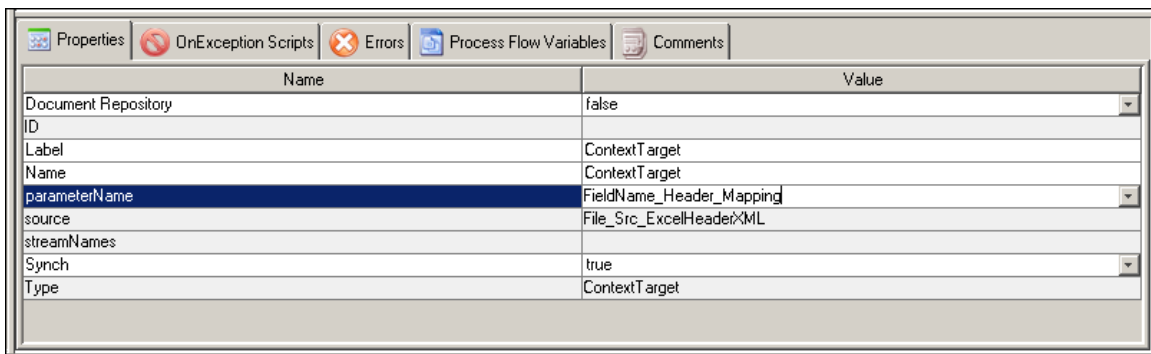
Figure 254: Context Target Properties

In this process flow, the value of *parameterName* field is *FieldName_Header_Mapping*.

After context target, schema uses the *PutContextVar* action. This action sets the value of the variable *Service.<ActivityName>.excelHeaderMappingXML* in the XML Schema. Figure 255 shows the properties of *PutContextVar* action.
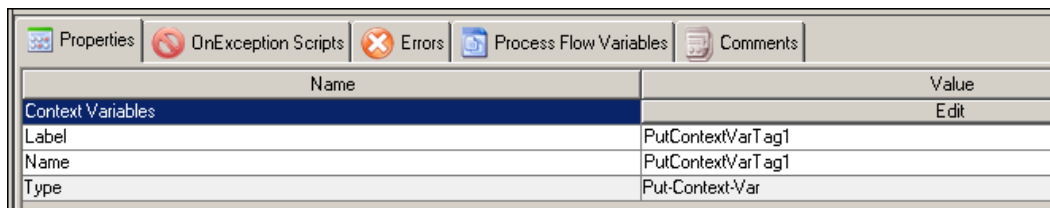
Figure 255: PutContextVar Properties

1.   Click **Edit** to define the variable name and the value to be set. The **Edit Context Variables** screen is displayed (see Figure 256).
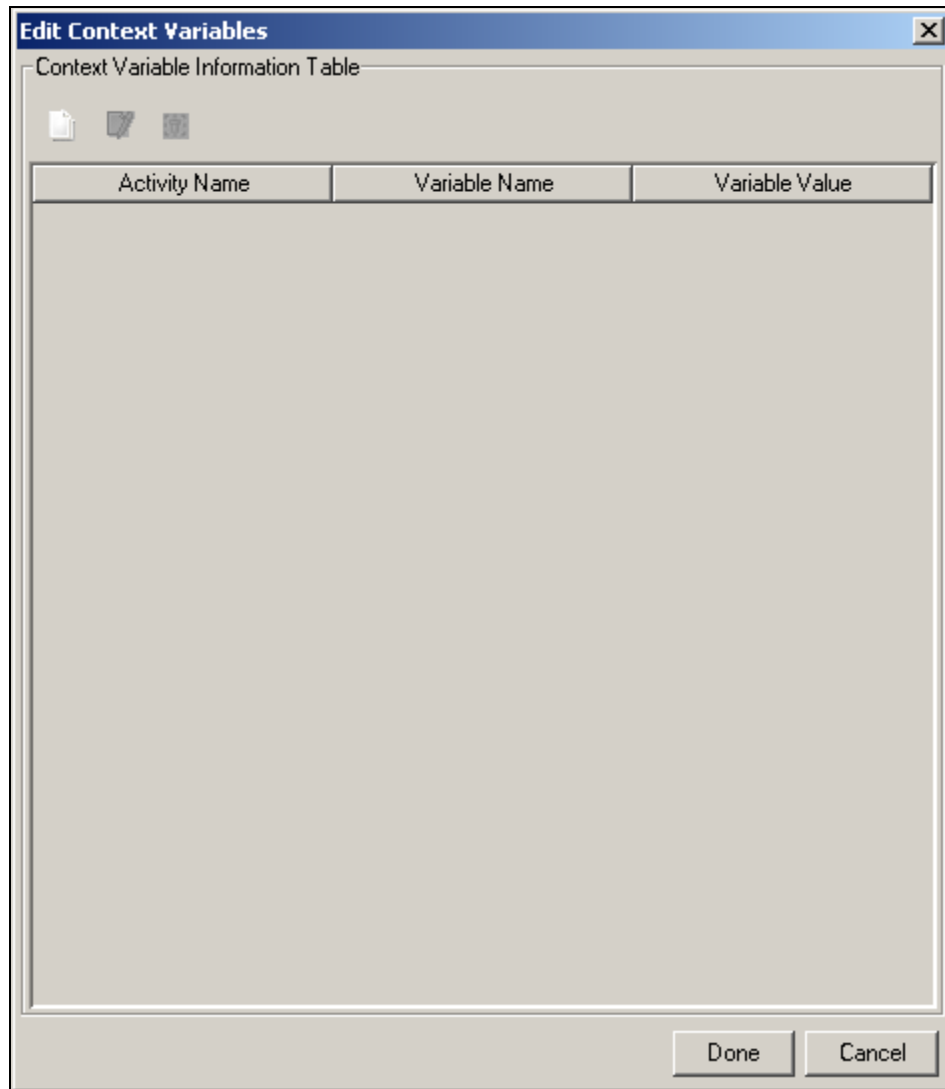
Figure 256: Edit Context Variables

2. Click the **New** (   ) icon. The **Context Variable Information** dialog box is displayed (see Figure 257).
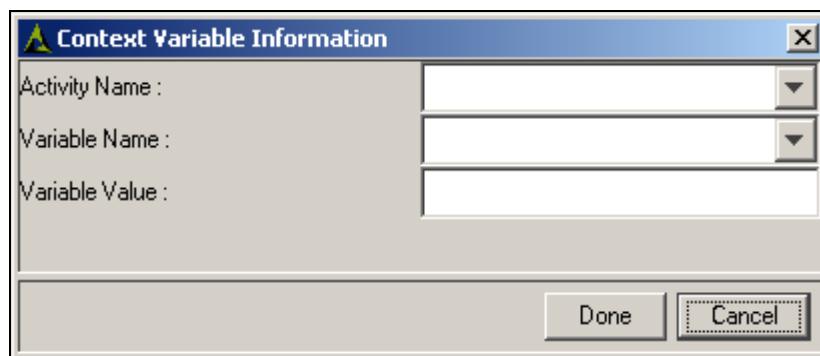
Figure 257: Context Variable Information

3. Enter Service.<ActivityName>.excelHeaderMappingXML in the **Variable Name** field. For example, Service.Excel_Schema.excelHeaderMappingXML

   where

Activity Name is name of the Excel Schema Activity. For Example *FieldName_Header_Mapping*.

4.   In the Variable Value field enter the value, which you defined in the parameterName in the Context Target activity.

5.   Click **Done** twice to return to graph canvas area.

6.   Make sure to create a stream from file source to Excel Schema activity.

> ℹ️   To Know how to create a process flow, refer to the Creating Process Flow section.

CREATING POSITIONAL SCHEMA ACTIVITY

The Positional Schema activity defines the procedure to read data from a Positional file, and write data in a Positional file. User needs to specify the names and the positions of required fields in order to enable identification of those fields.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create Positional schema

1.   On the Adeptia Suite homepage, click the **Develop** tab.

2.   Go to **Services > Schema** and then click **Positional**.

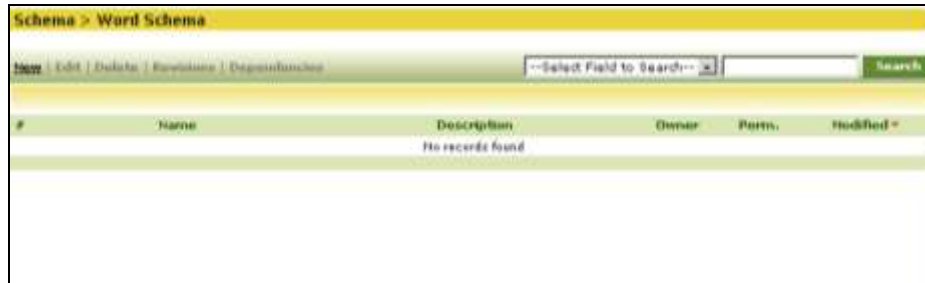The **Manage Positional Schema** screen is displayed (see Figure 258).

Figure 258: Manage Positional Schema

3.   Click the Create New link. The **Create Positional Schema** screen is displayed.

4.   Enter the name and description for new Positional Schema in the textboxes **Name** and **Description** respectively.

5.   Data Header usually contains the titles of the fields in a text file. If data header is present in the text file, select the *Data Header Present* checkbox (see Figure 259).

Figure 259: Create Positional Schema

6. To define the schema using definition file, select the **Import Definition File** radio button; select the type of file from the dropdown list and click the **Upload File** button to select the required file. The *Schema File* upload screen is shown (refer to Figure 247).

7. Click **Browse** and select the file, you want to upload.

8. Now click the **Upload File** button. Name of the uploaded file is shown in the **File Name** list (see Figure 260).

Figure 260: Uploaded File

9. Click **Finish** to close the *Schema File Upload* screen and return to create schema page.

10. If you want to create schema by entering the fields manually, select the **Enter the Fields Sequentially** radio button and follow the steps given below:

11. Enter name and description of the field in the textboxes **Name** and **Description** respectively.

12. Select the type of data from the dropdown list **Type**. For data type selection, refer to Table 2.

13. If data type is **Date**, select the format of date and time from the dropdown lists **DateFormat** and **TimeFormat** respectively.

14. To define field position select one of the following option:

   - Field Length
   - Start & End Positions

15. To define the field position using field length, select the *Field Length* radio button and enter the length of the field in the *Length* field.

16. To define the field position using start and end position, select the *Start and End Position* radio button.

17. Enter the start position of the field in the **StartPos** field.

18. Enter the end position of the field in the **EndPos** field.

> The starting position of a row in a positional file is 1.
>
> In a positional file, the schema counts the tab as one position and not eight positions. By default, creation of field positions is sequential. You can also create a schema with fields that are not in sequence. For details, refer to the Defining Field Positions Non-Sequentially section.

19. Select the alignment of the field from the dropdown list **Align**.

> From **Align** select
>
>   **L** if the field is left aligned.
>
>   **R** if the field is right aligned.
>
> To insert rows, specify the number and position of the rows that you want to add in the *Number of Rows* and at *Position* fields respectively and click **Add Row** button. You can add a maximum of 99 rows at a time.

20. Select the **Skip** checkbox if you want to skip this field while generating the XML. This selection skips the fields that are not required for the schema. For example, the source file has over 1500 fields, but you just need to use 1000 fields. This selection skips the 500 unrequired fields, and does not read them, when the data is parsed to the XML. When the data file is created, the skipped fields are displayed in the file but are not read. If the schema is created using an existing XSD, the skipped fields will appear as a blank value. However, when the schema is used in other activities such as Mapping, all its fields are displayed.

> Skipping of unrequired fields is useful in case of a standard XSD with a large number of fields. This reduces the size of the generated XML that now contains only the required fields.
>
> While editing the schema, when you download the data file, the Adeptia Suite represents the skipped fields by 'T' and the unskipped fields by 'F' (refer to Figure 225). Similarly, while viewing the *Print-Friendly Page*, the Adeptia Suite represents the skipped fields by 'T' and the unskipped fields by 'F'.

21. Click to expand **Advanced Properties**. Advanced properties of positional schema are displayed (see Figure 261).

Figure 261: Advanced Properties of Positional Schema

22. Disable the **Handle CR/LF (Source Data)** checkbox, if the source file does not have any carriage return. By default, this option is checked, and schema expects file with carriage return. Handle CR/LF (Source Data) option is applicable only for the schema used at the source end.

23. Enter the target record separator in the textbox **Target Record Separator**, if you want to write each record in new line in target file. By default records are written in single line. This option is applicable only for the schema used at target end.

24. Select the **Data Truncation** checkbox, in case the data length is more than specified in the schema and you want to pass the specified length of data and ignore the rest of the data.

> ℹ️ The schema that you use at the target end has the option of *Data Truncation*.

25. Select the **Allow Less Fields** checkbox, if you want to parse the data even if the number of fields in the data file is less than the number of field specified in the schema. If Allow Less Fields checkbox is selected and the schema is used at source end, schema will parse the input data and insert the empty tag of missing fields. If the schema is used at target end, it will write all the tags coming in input XML.

26. In case number of fields in source data is more than the number of fields specified in the schema, only those fields are parsed, which are specified in schema. Other fields are ignored. If you want to generate error records, when number of fields in source data is more than the number of fields specified in schema, disable the **Allow More Fields** checkbox.

27. In case the input data contains some characters that are invalid in XML, then this may result in the mapping getting aborted. You can filter these invalid XML characters by selecting the **Filter Invalid XML Characters** checkbox.

28. Click the **Save** button.

CREATING TEXT SCHEMA ACTIVITY

You can use the Text Schema activity to define how the Adeptia Suite reads from or writes to a text file in a predefined format. To create a Text Schema activity, you need to specify the format of text file.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a text schema activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

    Go to **Services > Schema** and then click **Text**. The *Manage Text Schema* screen is displayed (see Figure 262).

Figure 262: Manage Text Schema

2. Click the Create New link. The *Create Text Schema* screen is displayed.

3. Enter the name and description of the new text schema in the textboxes **Name** and **Description** respectively.

4. Data Header usually contains the titles of the fields in a text file. If data header is present in the text file, select the **Data Header Present** checkbox.

5. Enter the record separator, for example \n for new line or " " for space, in the **Record Separator** field. The record separator is used to separate records.

6. Enter the Field Separator, for example \t for Tab or " " for space. In the **Field Separator** field. Field Separator is used to separate fields (see Figure 263).

Figure 263: Create Text Schema

> ℹ️ You can also specify record separator and field separator in Hex format. To specify record separator and field separator you need to use 0x before the hex value. For example to specify new line in hex format, you need to use 0x0A.

7. To define the schema using definition file, select the **Import Definition File** radio button; select the type of file from the dropdown list and click the **Upload File** button to select the required file. The **Schema File** upload screen is shown (refer to Figure 247).

8. Click **Browse** and select the file, you want to upload. Path of the selected file is shown in the *Browse* **File** field.

9. Now click the **Upload File** button. Name of the uploaded file is shown in the **File Name** list (see Figure 264).

Figure 264: Uploaded File

10. Click **Finish** to close the Schema File Upload screen and return to create schema page.

11. If you want to create schema by entering the fields manually, select the **Enter the Fields Sequentially** radio button and follow the steps given below:

12. Enter the name of each field in the **Field Name** field.

13. Select the type of data from the **Type** dropdown list. For data type selection, refer to Table 2.

> Only the Excel Schema supports the currency data type.

14. If data type is *Date*, select the format of date and time from the *DateFormat* and *TimeFormat* dropdown lists respectively.

> To insert rows, specify the number and position of the rows that you want to add in the *Number of Rows* and at *Position* fields respectively and click **Add Row** button. You can add a maximum of 99 rows at a time.
>
> To remove rows, specify the number and position of the rows that you want to delete in the *Number of Rows* and at *Position* fields respectively and then click **Remove Row** button.

> If you delete the last fieldname of a record and save the schema, this action will delete the entire field. For example, a record has three fields – *Name*, *Description*, and *Age*. If you delete *Age* then, the schema will delete the entire field.

15. To enable quotes handling, click **Advanced Properties** and check the *Quotes Handling On* checkbox.

> If a character (say $) is specified as Field Delimiter in a record, then any $ character in the field data of that record (Chocolate20perpack) will be considered as a Field Delimiter, even though it is part of the field data. In the example, the schema will consider the $ after 20 as a Field Delimiter, whereas it is the data. To avoid this situation put that field within the double quote i.e. (Chocolate$"20$perpack").

16. In case the number of fields in the data file is less than the number of fields defined in schema, you need to enable **Allow Less Fields** checkbox to process the data.

> - When the number of fields in the data file is less than the number of fields defined in the schema then, the schema will not process the data and will give an error during execution.
> - If you still want to process the data, then you need to enable the *Allow Less Field* checkbox.
> - When you enable the *Allow Less Field* option then, then schema generates an empty tag for fields that are not present in the data file.
> - This option is applicable only when you use the schema at the source end.

17. If you want to remove enclosing characters (e.g. ' , " , & , < , >) from the data file while parsing, enter the enclosing character that you want to remove, in *Handle Enclosing Character* field. Currently following enclosing characters are supported:

- Single Quote (')
- Double Quote (")
- Less than symbol (<)
- Greater than symbol (>)

18. In case the input data contains some characters that are invalid in XML, then this may result in the mapping getting aborted. You can filter these invalid XML characters by checking the *Filter Invalid XML Characters* checkbox in Advanced Properties.

> **i** To learn about Advanced Properties refer to Changing Advanced Properties section.

19. Click the **Save** button.

Services > Schema > Text		✕
Description	Text Schema for Stock Quotes	
Data Header Present	Yes	
Quotes Handling On	No	

XSD	`<?xml version="1.0" encoding="ISO-8859-1"?>`
	`<!-- W3C Schema generated by Adeptia Editor -->`
	`<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">`
	`    <xs:element name="Root">`
	`        <xs:annotation>`	

Entity Id	19216800111911121766617282600007	
Owner	demouser	
Owner's Group	DemoGroup	
Creation Date	07/19/2005 15:12:52	
Last Modified Date	02/07/2013 20:16:34	
Last Modified By	admin	
Permissions	Owner(R,W,X) Group(R,X)	
Character Set Encoding	ISO-8859-1	
Synchronized Activity	No	

Figure 265: Text Schema Summary screen

CREATING WORD SCHEMA ACTIVITY

You can use the Word Schema to convert a MS Word file into XML format, so that you can use it as per your requirement. Word Schema uses a pre-built template XSD XMSW.xsd, which defines the structure of the XML file. When you create a word schema, the Adeptia Suite stores this XSD into the backend database to define the structure of the schema. The schema does the Word to XML conversion at runtime.

> ℹ️ This is a paid feature and hence not available in any of the Adeptia products by default.

Steps to create Word Schema

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Configure > Services > Schema** and then click **Word**. The *Manage Word Schema* screen is displayed (see Figure 266).

Figure 266: Manage Word Schema

3. Click the **Create New** link. The *Create Word Schema* screen is displayed (see Figure 267).

Figure 267: Create Word Schema

4. Enter the name and description for Word Schema in the **Name** and **Description** fields respectively.

5. Leave the Create Schema Definition Using field as default.

6. If you want to view the XML of the word file, which you want to convert, click the **Browse** button and select the required word file.

> ℹ️ This field is not mandatory because at execution time, the schema parses the Word file with the help of the File Source activity.
>
> This field is mandatory only if you want to view the XML of the Word file. To view the XML of the Word file, first browse and select the word file. Save the Word Schema activity and then

edit the word schema activity that you have created. Click **Download** in the Edit Word Schema screen. Figure 268 shows the Download Word Schema Definition File screen.
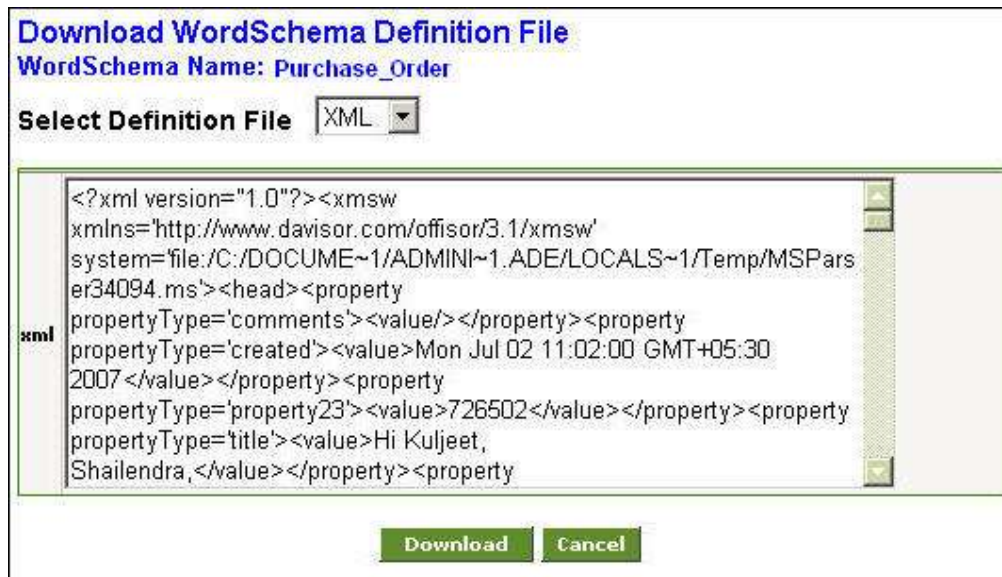
Figure 268: Download Word Schema Definition File

To download the XML, select XML from the *Select Definition File* dropdown list and click **Download**.

To download the word file select Word from the select *Definition File* dropdown list and click **Download**.

Click **Cancel** to close the Download Word Schema Definition File dialog box.

To learn more about Advanced Properties refer to Changing Advanced Properties section.

7.   Click the **Save** button.

CREATING XML SCHEMA ACTIVITY

The XML Schema activity defines the procedure to read data from and write data to an XML file. You can do that by specifying the schema definition location.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create XML Schema

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Schema** and then click **XML**.

   This action will display you the *Manage XML Schema* screen (see Figure 269).

Figure 269: Manage XML Schema

3. Click the **Create New** button. This action will display you the *Create XML Schema* screen (See Figure 270).

Figure 270: Create XML Schema

4. Enter the name and description for XML Schema in the **Name** and **Description** textboxes respectively.

> If you want to validate the XML during execution then select the **Validate XML** checkbox. This will then validate the input XML file at runtime.

5. Select one of the following Definition Modes:

    - Import File
    - Web Service Consumer
    - Web Service Provider
    - Web Form

6. If your XSD file is referring to another XSD file then you can either choose an existing file reference activity from the **File References** drop-down list or click on the ✚ button to create a new file reference activity. You can click on the 🖉 button, if you want to update an existing file reference activity.

> To know how to create a file reference activity, please refer to the Creating a File References Activity section.
>
> The items in the **Consumer ID** and **Provider ID** drop-down lists are those items that you have created using the WSDL4j parser. All the Consumer and Provider activities that you create using the new parser (Easy WSDL) can now be directly loaded into the Data Mapper.
>
> Earlier you could not load XML Schema for certain types of XSD due to the limitations of the old XSD parser (CASTOR). As workaround, you have to modify the XSD file. The Adeptia Suite now has a new XSD parser (Easy Schema parser) which over comes this problem. The Easy Schema parser also improves the performance when there are a lot of referential XSDs.
>
> The Adeptia Suite provides interoperability between CASTOR and Easy Schema parser. You just need to edit and save an activity using the parser that you want to use.
>
> To learn more about Data Mapper, please refer to the Using Data Mapper section.

7. To validate the path of the file in the **File Path** field, click the **Validate XSD** button. You can validate all XML, XSD, or DTD files with this validator. If it is not an XSD file, then the schema will convert it to an XSD file format and then validate (See Figure 271).

File getShippingAndInvoiceInfo_0.xsd of type xsd is valid.

Figure 271: Validate XSD Screen

You can read the selection process of options in the table below.

Table 3: Selection Process of Value for Upload XSD/DTD/XML from Field

Option	Process
File Path	Click the **Browse** button and select the XSD file that you want to use. If you want to check if the XSD file is valid or not then click the **Validate XSD** button.
Web Service Consumer	Here you have to select a pre-defined Web Service Consumer activity from the **Consumer ID** drop-down list. You also have to select an XSD type from the **XSD Type** dropdown list.
Web Service Provider	Here you have to select a pre-defined Web Provider activity from the **Provider** drop-down list. You also have to select an XSD type from the **WsProvider XSD Type** dropdown list.
Web Form	Here you have to select a pre-defined Web Form activity from the **Web**

Option	Process
	Form drop-down list.

8. Click **Advanced Properties**. This action will show you the Advanced Properties of XML Schema activity (see Figure 272).

Figure 272: Advanced Properties of XML Schema

9. If you check the **Convert XML/DTD to XSD** checkbox then it will instruct the schema to convert the entire XML/DTD to XSD. If you don't want to convert the XML/DTD file into a XSD file then, uncheck this checkbox.

> ℹ To learn more about Advanced Properties refer to the Changing Advanced Properties section.

10. Click the **Save** button.

> ℹ In case you want to update your existing Web Service Provider Activity using EasyWSDL parser then please refer to the Updating Existing XML Schema Activity Using Easy Schema Parser section.

Updating Existing XML Schema Activity Using Easy Schema Parser

When you upgrade your existing XML schema activity by using the new parser (Easy Schema Parser) then, it is possible that your mapping is lost in the process. For example - If you have an XSD file that has namespaces then, it is possible that the namespace pre-fix may change when you update the existing XML schema activity by using the new parser. In this case the mapping can be lost and you may have to repeat the mapping process. If you want to know more about how to do data mapping then please refer to the Map Source and Target Elements section.

To ensure that there are no structural changes in your mapping please follow the below steps:

1. Create a new XML schema activity using the same XSD file.

2. Load both the XML schema activities (exiting and new) into data mapper.

3. Verify their hierarchy.

If you want to update your existing XML Schema activity by using the new parser (Easy Schema Parser) then follow the below steps:

Steps to Use Easy Schema Parser For Existing XML Schema Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Schema** and then click **XML**.

3. Either click on an existing activity name that you want to parse using the Easy Schema parser or click on the Action menu of any existing activity and select the **Edit** option.

4. Expand the **Advanced Properties** section and check the **XML Schema Version 2.0** checkbox (see Figure 273).

XML Schema Version 2.0 ☑ Help

Figure 273: Move To Easy Schema Parser

5. Click the **Save** button to save your activity.

> The Help link beside the **XML Schema Version 2.0** checkbox provides you with some additional information about the parser.

Testing Schema Activity

Once you have created a schema then, you can verify the schema activity. Schema can be tested for both source and target end. In order to test a schema you have to supply the source file, and schema will show you the output file and the error file if any. When a schema is tested, it parses the supplied file as per the structure defined in the schema and generates the output and error files. The output file contains the record which are parsed successfully error file contains the record which are not parsed. Follow the below steps to process of testing a text schema is explained below.

Steps to verify text schema activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Schema** and then click **Text**.

   The *Manage Text Schema* screen is displayed (refer to Figure 262).

3. Select the schema activity that you want to test and click **Edit** link or select the option **Edit** from the **More Actions** menu under the **Actions** column *Activity Manage* page. This displays the *Edit Text Schema* screen (see Figure 274).

Figure 274: Edit Text Schema

4. Click the **Test** button. The *Test Schema* screen is displayed (see Figure 275).

Figure 275: Test Schema

5. Select the type of schema to test, from the dropdown list **Type**. By default, Source is selected.

6. Click the **Browse** button and select the file which you want to test.

> The file extension in this field will vary based on the schema you are testing. If you are testing a text schema then, the file will have *.txt* extension. If you are testing an excel schema then, the extension will be *.xls*.

> **i** If you want to test this schema for the target end, select *Target* from the *Type* dropdown list. Now the source file will be an xml file that the mapping activity generates. In this case, target file will be the file that the schema generates as an output. For example, if you are testing a Text Schema that you are using at the target end then, the target file will be a .txt file.

7. Click the **Submit** button. This tests the specified source file according to the defined schema and gives you the link of out files generated.

> **i** Once you click the **Submit** button, there files are generated:
>
> *Source File: File which you have selected*
> *Target File: File which is generated by schema as output*
> *Error File: File that contains erroneous record if any.*

8. To view the file click on the link of file you want to view.

> **i** You can test all the schemas except for Advance Database schema, Database schema, and XML Schema.

CREATING XML VALIDATOR ACTIVITY

You can use an XML Validator to validate the whole XML file or parts of it. For validation, you need to provide the Xpath of the elements of the XML file and the path of the XSD against which the schema will validate that XML file.

This feature is available in:

Enterprise	Premier	Professional	Express
✓			
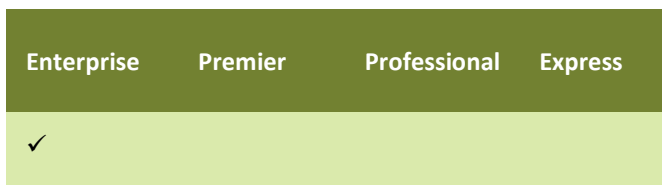
Steps to create a XML Validator activity

1. On the Adeptia Suite homepage, go to **Configure → Services → Schema** and then click **XML Validator**.

   The *XML Validator* screen is displayed (see Figure 276).

Figure 276: Manage XML Validator

2. Click the **Create New** link.

This action will display you the *Create XML Validator* screen (see Figure 277).

Figure 277: Create XML Validator

3.   Enter the name and description of the new XML Validator activity in the **Name** and **Description** textboxes respectively.

4.   If you want to validate the Sub XML, check the **Validate Sub XML** checkbox.

5.   In the **Enter XPath** textbox, enter the XPath of the XML file that you want to validate.

6.   In the **XSD File Path** textbox, enter the path of that XSD file, which the schema will use to validate against the XML file.

> ℹ   To learn more about Advanced Properties refer to the Changing Advanced Properties section.

7.   Click the **Save** button.

CREATING EDI SCHEMA ACTIVITY

The EDI (Electronic Data Interchange) Schema activity is created to define how the data in predefined EDI format; an industry standard is managed.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create EDI Schema

1.   On the Adeptia Suite homepage, click the **Develop** tab.

2.   Go to **Services > Schema** and then click **EDI**.

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The *Manage EDI Schema* screen is displayed (see Figure 278).

Figure 278: Manage EDI Schema

3. Click the **Create New** link. The **Create EDI Schema** screen is displayed.

4. Enter the name and description of new EDI schema activity in the textboxes **Name** and **Description** respectively.

5. Enter the Segment Separator, e.g. '~' in the textbox **Segment Separator**.

6. Enter the Field Separator, e.g. '*' in the textbox **Field Separator**.

7. Enter the Composite Separator, e.g. '+' in the **Composite Separator** field. A Composite Separator is used to separate composite fields (a field which contains more than one sub-fields) in an EDI file.

8. Select the **Validate Incoming/Outgoing Data** checkbox if you want to validate the incoming and outgoing EDI Data. If this schema is used at source end, it validates the incoming EDI file and generates intermediate XML stream and an EDI acknowledgment stream. If this schema is used at target end, then it validates the input XML and generates error records if there is any error.

9. Select the required EDI Data Dictionary from the **Create Schema Definition** field and click the **Select EDI Specification** button. This displays the *Select Transaction* screen (see Figure 279).

Figure 279: Select EDI Specification

> ℹ️ To know how to create EDI Data Dictionary, refer to the
> Creating EDI Data Dictionary section.

10. Select the required EDI Specification and click **OK**. This closes the Select EDI Specification screen. The selected EDI specification is populated under Segment Definition in the **Create EDI Schema** screen (see Figure 280).

Figure 280: Create EDI Schema

> To learn about Advanced Properties refer to Changing Advanced Properties section.

11. Click the **Save** button.

CREATING TARGET ACTIVITY

Adeptia Suite enables you to transfer data from any source location to any target location. Once you have fetched the data (by creating a source activity) and defined the file format for the source data or the target data (by creating a schema), you will be required to create a target activity. A Target Activity allows you to identify specific data that you can create and the means to deliver it. The *Target activity* screen allows you to identify specific data set (i.e., flat file, XML, or database record) that you can create, its location, and the transport protocol that you need to use to send this data. The Adeptia Suite allows following types of Target activities:

- Advanced Database Target
- Database Target
- File Target
- FTP Target
- HTTP Target
- JMS Target
- LAN File Target
- Mail Target
- WebDAV Target
- Context Target

You can use the Context Target to put the data in the process flow context. To know how to use Context Target refer to the section Using Context Source and Context Target activity.

CREATING ADVANCED DATABASE TARGET ACTIVITY

The Advanced Database Target activity provides the ability to specify multiple tables of a database. These are the target tables for which you can fetch the data from the source location by creating a source activity. On execution of the process flow, the activity maps the schema of the fetched data to the schema of the target data. Moreover, depending on how you want to process the error records, the activity will move the data records to these target tables.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisites

Database Info activity and *Advanced Database Schema* must be created before creating Advanced Database Target activity.

This section describes how to create an Advance Database Source activity using the following details as an example:

Steps to create an Advanced Database Target Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** ➔ **Target** and then click **Adv.Database**.

    The *Manage Advanced Database Target* screen is displayed (see Figure 281).

Figure 281: Manage Advanced Database Target

3. Click the **Create New** link. The *Create Advanced Database Target* screen is displayed.

4. Enter the name of the new Advanced Database Target in the textbox **Name**. Then, enter the description for the Advanced Database Target in the textbox **Description**.

5. Select the database info activity and database schema activity from the dropdown lists **Database Info** and **Schema Name** respectively (see Figure 282).

Figure 282: Create Advanced Database Target

6. Database Operation specifies how data records are inserted into database tables. Select one of the following database operations:

    *   Insert
    *   Update
    *   Insert/Update
    *   Update/Insert

> If the specified database operation fails on any source data, the activity creates its error records. While creating a process using an Advance Database Source, you can specify what to do with error records.
>
> - Error records can be saved into repository file
> - Error records can be ignored
> - It can be further processed (e.g. can be sent to File Target)
> - Process Flow can be aborted, if there is any error record
>
> In the Process Designer, right click on the Advance Database Source activity and select the **View** properties. Select the value of the "Error Record" properties.
>
> To learn, how to use Process Designer, refer to the section *Using Process Designer*.
>
> To learn how to create Database Info activity, refer to the *Creating Database Info* section in the *Administrator Guide*. To learn how to create the Advance Database Schema activity, refer to the *Creating Advance Database Schema* Activity section.

> When an excel file is used as a database target, only *Insert* operation is supported. The *Update, Insert/Update* and *Update/Insert*, operations are not supported.
>
> When an excel file is used as a database target, the error records are not generated in case of data type mismatch.

When you select a database operation, the database is affected. For details, refer to Table 2.

> To learn about Advanced Properties refer to [Changing Advanced Properties](#) section.

7. Click the **Save** button.

Understanding Record Count in Process Flow Logs

The Process Flow Log displays the number of records processed by an Advanced Database Target activity during the execution of a process flow. This record count differs based on its type. The various types of record counts are explained below.

Transaction Commit Count

This record count type includes the total number of records in the input at root level, which the Advanced Database Target activity can successfully process and commit. It includes inserted, deleted, and updated records.

Insert Query: Submitted/Successful

This record count type includes the Insert Query, which are submitted or are successful. Submitted is the total number of Insert Query submitted/executed by the Advanced Database Target activity.

Successful is the total number of records, which are inserted and committed in the table for the Insert Query and which are not rolled back.

> ℹ The 'Successful' count can be equal or less than the 'Submitted' count in case of "Insert" operation.

Delete Query: Submitted /Successful

This record count type includes the Delete Query, which are submitted or successful.

Submitted is the total number of Delete Query submitted/executed by the Advanced Database Target activity.

Successful is the total number of records, which are deleted and committed from the table for the Delete Query and which are not rolled back.

Update Query: Submitted /Successful

This record count type includes the Update Query, which are submitted or successful.

Submitted is the total number of Update Query submitted/executed by the Advanced Database Target activity.

Successful is the total number of records, which are updated and committed in the table for the insert query and which are not rolled back.

> ℹ The 'Successful' count can be greater than the 'Submitted' count in case of "Update" or "Delete" operation.

Rollback Transaction Count

This record count type includes the total number of records in the input at root level that the Advance Database Target activity has rolled back.

Rollback Insert Count

This record count type includes the total number of records, which were to be inserted but rolled back due to any error.

Rollback Delete Count

This record count type includes the total number of records, which were to be deleted but rolled back due to any error.

Rollback Update Count

This record count type includes the total number of records, which were to be updated but rolled back due to any error.

To understand the different counts, let us assume the following example:

R1 (10)	R1C1 (20)	R1C1C1 (100)
R2 (20)	R2C1 (40)	R2C1C1 (80)

Suppose there are two records *R1* and *R2* at root level of input. *R1* has a child *R1C1* and further *R1C1* has a child *R1C1C1*. Similarly, *R2* has a child *R2C1* and further *R2C1* has a child *R2C1C1*.

Their number of records is displayed in the brackets. For these records, insert queries are issued by the Advanced Database Target activity. Records from *R1*, its child (*R1C1*) and sub-child (*R1C1C1*) are successfully inserted in the target table. At the same time, while inserting the records from *R2C1C1* the Advance Database Target activity encountered an error in 8 records. Now, the record of *R2* and its child (*R2C1*) corresponding to erroneous records will be rolled back. Thus, the number of records rolled back from *R2C1C1*, *R2C1*, and *R2* will be 8, 4, and 2 respectively.

Thus, in this scenario, the values of the record count types will differ as displayed below.

Table 1: Record Count Type Values

Record Count Type	Value	Description
Transaction Commit Count	28	10 records from R1 and 18 records from R2
Insert Query: Submitted/Successful	270/256	Total number of records (270) – Total number of rolled back records (14)
Rollback Transaction Count	2	Number of records rolled back from root level
Rollback Insert Count	14	R2 (2) + R2C1 (4) + R2C1C1 (8)

All the other counts will be zero.

CREATING DATABASE TARGET ACTIVITY

The Database Target activity provides the ability to specify a database as target.
This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisites

Database Info activity and *Database Schema* must be created before creating Database Target activity.

This section describes how to create a Database Target activity using the following details as an example:

Steps to create a Database Target Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Target** and then click **Database**.

    The *Manage Database Target* screen is displayed (see Figure 283).

Figure 283: Manage Database Target

3. Click the **Create New** link. The **Create Database Target** screen is displayed.

4. Enter the name and description of the new Database Target in the textboxes **Name** and **Description** respectively.

5. Select the database info activity and database schema activity from the dropdown lists **Database Info** and **Schema Name** respectively (see Figure 284).

Figure 284: Create Database Target

> ℹ To learn how to create Database Info activity, refer to *Creating Database Info* section in *Administrator Guide*. To learn how to create Database Schema activity, refer to the Creating Database Schema Activity section.

> ℹ Database target can insert/update current date in the database. This current date is added in the input XML in two ways:
> - Source XML

> • Mapping
>
> It can be added through the source XML that has the current date already defined in its code.
>
> It can be added through mapping, if current date is defined as a constant in the Date field, or as a variable which has the value "Current Date". In this case, when mapping is done, then database target accesses the current date and inserts/updates it accordingly.

6. Database Operation specifies how data records are inserted into database tables. Select one of the following database operations:

    • Insert

    • Update

    • Insert/Update

    • Update/Insert

The effect that the selection has on the database is listed in the table below.

Table 2: Effect on Database based on the selected Database Operation

Database Operation	Effect on Database
Insert	This option is selected when you want to insert records into the database tables. If records already exist in the database table, new records are added in the database table along with existing records. When a column e.g. CompanyName of database table is marked as Primary Key, more than one record cannot exist in the database table for the same Company Name. In this case if data of a company i.e. Microsoft Corporation already exist, insert operation fails and data is not inserted into the database.
Update	This option is selected when you want to update the existing record. To use updated option a column of database must be marked as Primary Key. When Update option is selected, database target first checks which column of the database table is marked as Primary Key. Suppose CompanyName column is marked as Primary Key. Now database target check whether data of a company e.g. Microsoft Corporation already exist or not. If data for Microsoft Corporation already exists, database target updates the existing records. If none of the column is marked as Primary key, Update operation fails.
Insert/Update	This option is selected when the database target first tries to insert the data into database table. If insert operation fails, database target tries to update the data.
Update/Insert	This option is selected when the database target first tries to update the database table. If update operation fails, database target tries to insert the data.

> **ℹ** If the specified database operation fails on any source data, error records are created.
>
> To learn, how to use Process Designer, refer to the section Using Process Designer.
> To learn how to handle error records, refer to the section **Handling Error Records**.

> **ℹ** When an excel file is used as a database target, only *Insert* operation is supported. The *Update, Insert/Update* and *Update/Insert* operations are not supported.
> When an excel file is used as a database target, the error records are not generated in case of data type mismatch.

7. Click the **Save** button.

CREATING FILE TARGET ACTIVITY

The File Target activity provides the ability to specify the name and path of the target file that you want to create. This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓
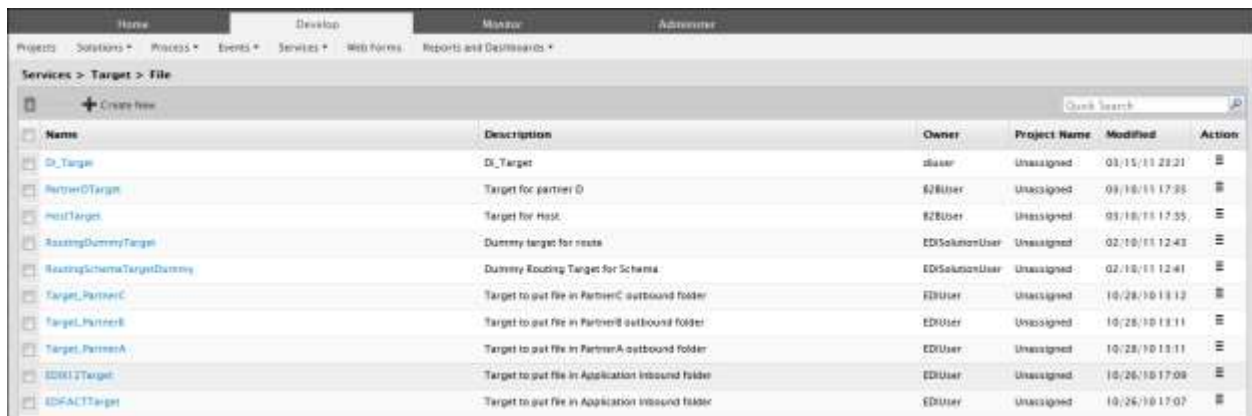
This section describes how to create a File Target activity using the following details as an example:

File Path	C:/HR_Files/Employee
File Name	Employee_PersonalDetails.xls

Steps to create a File Target Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Target** and then click **File**.

The *Manage File Target* screen is displayed (see Figure 285).

Figure 285: Manage File Target

3.   Click the **Create New** link. The *Create File Target* screen is displayed.

4.   Enter the name and description of the new File Target in the textboxes **Name** and **Description** respectively.

5.   To specify the target location, enter the full path of the target file in the textbox **File Path**. However, if the respective drive does not contain the folder mentioned in the path then the creation of the new folder will depend on the value of the system property **abpm.target.createFolder** and on the option value selected from the new drop-down list **Auto folder Creation** added in the **Advanced Properties** section.

> To check or change the value of the application property **abpm.target.createFolder**, refer to the **Updating System Properties** section in *Administrator Guide*. The **Target Property** is present under the **Services** category. By default, the value of this property is set to **None**.

6.   Enter the name of the target file in the textbox **File Name**.

7.   If you want to append date and time stamp in the target file name, then select the date and time stamp from the dropdown list **Time Stamp**.

8.   If you want that each target file created by this activity should have unique name, then select the *Create Unique File* checkbox.

When this option is enabled, a 30 digit random number is appended in the file name (see Figure 286).

Figure 286: Create File Target

> To learn about Advanced Properties refer to Changing Advanced Properties section. To learn about appending property refer to Appending Data to an Existing Target File section.

9. Click **Advanced Properties** to expand the hierarchy. All items in **Advance Properties** are displayed.

    A new drop-down list **Auto Folder Creation** has been added. This drop-down list has the following three options:

    - None
    - Yes
    - No

    By default, the option **None** is selected.

    When the value of the system property **abpm.target.createFolder** is set to **Yes** and if the option value selected from the drop-down list **New Folder** is:

    - **Yes**, then the new folder will be created.
    - **No**, then the new folder will not be created and an error message will be displayed.
    - **None**: Then the new folder will be created.

    When the value of the system property **abpm.target.createFolder** is set to **No** and if the option value selected from the drop-down list **New Folder** is:

- **Yes**, then the new folder will be created.
- **No**, then the new folder will not be created and an error message will be displayed.
- **None:** Then the folder will not be created.

Figure 287: File Target advance Properties

10. Click the **Save** button.

> You can verify the File Target activity at design time. For this, click **Test**. This verifies the values given in the *File Path* field.

APPENDING DATA TO AN EXISTING TARGET FILE

Whenever a File Target activity or a LAN File Target activity is executed it creates a new file and writes the data into it. If the file, which is specified in the File Target activity or LAN File Target activity already exists in the target location then it gets overridden by the new file. Sometime you may want to append or add the target data into an existing file. To achieve this, you can enable the append property of File Target activity or LAN File target Activity which is used in your process flow. By default the append property is not enabled. This section explains how to enable append property.

Steps to enable Append property of File Target and LAN File Target.

1. Open the process flow in which File /LAN file Target activity is used.
2. Click the *File/LAN file Target* from the Process Designer. This displays the properties of the activity, in the *Property* panel.
3. From the *Properties* panel, set the value for its *append* property to *True*. (see Figure 288).
4. Save the Process flows. Your data would be added to the existing file on execution.
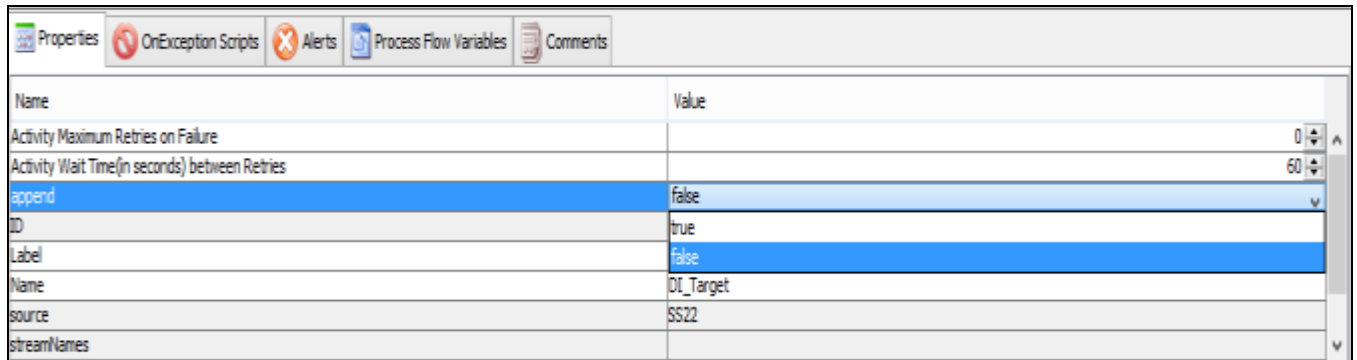
Figure 288: Enabling Append Property for File Target Activity and Lan File Target Activity

> This feature is supported for Excel and Text files only. In Excel, append feature is supported only for single sheet and not for multiple sheets. Also, this feature is not possible when you use *Time Stamp* and *Create Unique File* options while creating a File Target Activity or a LAN File Target Activity.

CREATING FTP TARGET ACTIVITY

FTP Target provides the ability to specify a target location that is accessible via FTP.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This section describes how to create a FTP Target activity using the following details as an example:

File Name	Employee_PersonalDetails.xls
FTP Host address	200.180.70.60
Port No.	21
File Path	/HR_Files/Employee
User Id	MyUserID
Password	Mypassword
FTP Server Type	Normal

Steps to create a FTP Target Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Target**, and then click **FTP**.

    The *Manage FTP Target* screen is displayed (see Figure 289).

Figure 289: Manage FTP Target

3. Click the Create New link. The **Create FTP Target** screen is displayed.

4. Enter the name and description of the new FTP Target in the textboxes **Name** and **Description** respectively.

5. Enter the host name/IP address and port number of the FTP Server in the textboxes **Host Name** and **Port** respectively.

6. Enter the username and password of FTP Server in the textboxes **User ID** and **Password** respectively. Then, re-enter the password in the textbox **Confirm Password** field.

7. Enter the full path of the target file in the textbox **Remote File Path**. . However, if the respective drive does not contain the folder mentioned in the path then the creation of the new folder will depend on the value of the system property **abpm.target.createFolder** and on the option value selected from the new drop-down list **Auto folder Creation** added in the **Advanced Properties** section.

> ℹ️ To check or change the value of the application property **abpm.target.createFolder**, refer to the **Updating System Properties** section in Administrator Guide. The **Target Property** is present under the **Services** category. By default, the value of this property is set to **None**.

8. Enter the name of the target file in the textbox **File Name**.

9. If you want to append date and time stamp in the target file name, then select the date and time stamp from the dropdown lists **Time Stamp**.

10. If you want that each target file created by this activity should have unique name, then select the **Create Unique File** checkbox. When this option is enabled, a 30 digit random number is appended in the file name.

11. Enter the file extension in the field **File Extension** (see Figure 290).

Figure 290: Create FTP Target

12. Select the transfer mode as either BINARY or ASCII from **Transfer Mode** dropdown list. In BINARY mode a file is copied bit for bit from one machine to the other. Both files (the original and the transferred file) will contain exactly the same sequence of bytes. In ASCII mode a file may be changed slightly to maintain the meaning of EOL (End Of Line) characters.

13. Select the transfer type as either Active or Passive from the dropdown list **Transfer Type**. Active transfer is more secure since the client only initiates communication to the Server on one port whereas in case of Passive transfer the client initiates communication to the Server over two ports. Passive mode is useful when you are behind a firewall or a proxy.

14. Select the **SFTP** checkbox if the FTP Server specified in the **Host Name** field is an FTP Server over SSH.

15. Select the **FTPS** checkbox, if the FTP Server, specified in the **Host Name** field is an FTP Server over TLS/SSL.

16. In case you have selected **FTPS**, checkbox, then select the FTPS mode from **FTPS Mode** dropdown list. It can be *Explicit* or *Implicit* depending on FTP Server that you are accessing.

17. Select the protection level supported by the FTP Server, from the **Protection Level** drop-down list. This drop-down list has the following three options:

- None
- Clear
- Private

By default, the option **None** is selected.

18. If you want to validate the certificate sent by the FTPS Server, select the **Validate Server** checkbox.

19. Select keystore activity from the dropdown list **Keystore Name**. This option is applicable only when you have selected the **Validate Server** checkbox (see Figure 291).

Figure 291: Create FTP Target

When *Validate* option is not selected, it always accepts the certificate sent by FTPS Server.

When this option is selected, it validates the certificate sent by FTPS server against the certificate imported in Keystore.

Keystore is repository of security certificates.

To know how to create Keystore and import certificates, refer to *Creating Keystore* section of *Administrator Guide*.

To learn about Advanced Properties refer to Changing Advanced Properties section.

20.   Click **Advanced Properties** to expand the hierarchy.

All items in **Advance Properties** are displayed (see Figure 292).

Figure 292: Advanced Properties of FTP Target

21. The **Auto Folder Creation** drop-down list has the following three options:

- None

- Yes

- No

By default, the option **None** is selected.

When the value of the system property **abpm.target.createFolder** is set to **Yes** and if the option value selected from the drop-down list **New Folder** is:

- **Yes**, then the new folder will be created.

- **No**, then the new folder will not be created and an error message will be displayed.

When the value of the system property **abpm.target.createFolder** is set to **No** and if the option value selected from the drop-down list **New Folder** is:

- **Yes**, then the new folder will be created.

- **No**, then the new folder will not be created and an error message will be displayed.

> If the option value selected from the drop-down list **New Folder** is **None**. In this case, **None** indicates that the folder will be created depending only on the value of the property **abpm.target.createFolder**.
>
> If **abpm.target.createFolder** is set to **Yes** then the folder will be created and if abpm is set to **No** then the folder will not be created irrespective of the option value selected from the drop-down list **New Folder**.

22. Enter a time (in seconds) in the **Data Timeout** text box within which you want the FTP server to break the data connection. The defaut value is 60 seconds.

> ℹ️ If you want to disable this property then enter **0** in the **Data Timeout** text box.

23. The **Connector** dropdown lists the APIs that you can use to connect to the FTP Server.

    For any new activity, by default Secured Inet Factory option is selected in this dropdown list.

    The options of the **Connector** drop-down list changes as per your selection of the protocols that you want to use to establish the FTP connection. Please see the below table for more information:

Protocol	Options
FTP	Native Secured Inet Factory
SFTP	J2SCH (VFS) Secured Inet Factory J2SSH
FTPS	J2SCH (VFS) Secured Inet Factory

24. If you want to create a log file of your FTP activity then check the **Verbose** checkbox.

> ℹ️ The **Verbose** checkbox is enabled only when you select the **Secure Inet Factory** option from the **Connector** drop-down list. When you enable the **Verbose** checkbox, the log file is created within `<Adeptia Suite Installation folder>\AdeptiaServer\ServerKernel\Logs\Ftplogs` folder. Whenever you execute this activity a separate log file is created with the name `<ActivityName_MM-dd-yyyy hh-mm-ss.S>`.
>
> Here:
>
> *ActivityName* is the name of the FTP Activity for which log file is created.

25. Click the **Save** button.

> ℹ️ You can verify the FTP target activity at design time. For this, click **Test**. This verifies the values given in the *Host Name, Port, User ID, Password,* and *Secured* fields.

CREATING HTTP TARGET ACTIVITY

HTTP Target provides the ability to specify file location that is accessible via HTTP.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This section describes how to create a HTTP Target activity using the following details as an example:

File Name	EMP_PersonalDetails.xls
File Path	http://www.myorganization.com/HR_Files/Employee/
Protocol Type	HTTP

Steps to create a HTTP Target Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** > **Target** and then click **HTTP**.

   The *Manage HTTP Target* screen is displayed (see Figure 293).

Figure 293: Manage HTTP Target

3. Click the Create New link. The **Create HTTP Target** screen is displayed.

4. Enter the name and description of the new HTTP Target in the textboxes **Name** and **Description** respectively.

5. Enter the URL of the target application to which you want to post the data, in the textbox **HTTP URL**.

   > ℹ️ In above example sales.jsp is an application which handles the posted data. This application could be any server program like ASP and servlet etc.

6. Select the post type whether HTTP or HTTPS from the dropdown list **Post Type**.

7. Select RFC format from the dropdown list **RFC Format** (see Figure 294).

Figure 294: Create HTTP Target

> To learn about Advanced Properties refer to Changing Advanced Properties section.

8.   Click the **Save** button.

> You can verify the HTTP target activity at design time. For this, click **Test**. This verifies the values given in the *HTTP URL* and *Port Type* fields.

CREATING JMS TARGET ACTIVITY

A JMS Target activity enables you to send messages to JMS server, such as Apache MQ Server, Oracle AQ Server and Oracle WebLogic using JMS provider. JMS target is used to post the target data in a topic or to post the data in the queue of a JMS Server.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

This section describes how to create a JMS Target activity using the following details of a message to be send to JMS server, as an example:

Connection Type	Queue
Transfer Type	Secure
Queue Name	ReceiveMessage
User Name	MyUserName
Password	Mypassword
Delivery Mode	Delivery Mode
Correlation ID	EmpDetails

Prerequisites

- *JMS Provider* activity must be created before creating JMS Target activity.

Steps to create a JMS Target Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Target** and then click **JMS**.

    The *Manage JMS Target* screen is displayed (see Figure 295).

Figure 295: Manage JMS Target

3. Click the Create New link. The **Create JMS Target** screen is displayed.

4. Enter the name and description of the new JMS Target in the textboxes **Name** and **Description** respectively.

5. Select the JMS Provider activity from the dropdown list **JMS Provider**.

> To learn how to create JMS Provider activity, refer to the *Creating JMS Provider Activity* section in *Administrator Guide*.

6. Select the connection type as either queue or topic from the dropdown list **Connection Type**.

7. Enter the name of queue or topic as configured in the JMS Server in the textbox **Queue Or Topic Name**.

8. Select the **Create Dynamically** checkbox, if queue or topic specified above, doesn't already exist on the JMS Server. If you enable create dynamically checkbox, it will create the queue or topic specified above on the JMS Server.

9. Enter the username and password required to connect to JMS Server in the textboxes **UserName** and **Password** respectively.

Then, re-enter the password in the textbox **Confirm Password** (see Figure 296).

Figure 296: Create JMS Target

10. Select the delivery mode from the drop-down list **Delivery Mode**. This list has the following options:

- **Persistent**: Persistent messages are stored in persistent storage to be delivered at a later date if a client is unavailable. Persistent Message are retained, even if the JMS Server is restarted.
- **Non-Persistent**: Non-Persistent messages are not stroed in persistent storage. The non-persistent messages are lost, in case the JMS Server is restarted.

> The default delivery mode is persistent.

11. Enter the Correlation ID in the textbox **Correlation ID**. Correlation ID is used to link one message with another

12. Enter the priority level of the message in the textbox **Message Priority**. For example, if you want to send the message with priority 2, type 2 in the textbox **Message Priority**.

13. Enter the address at which you want to send the reply in the **Reply To** field (see Figure 282).
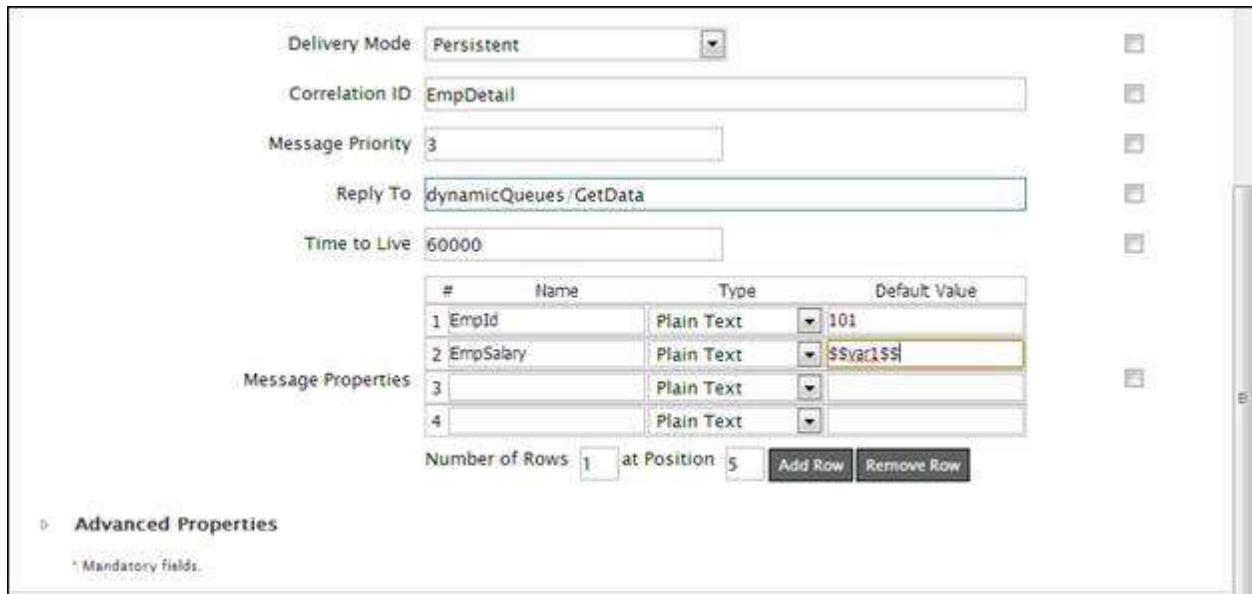
Figure 282: Create JMS Target

14.   Enter time to live for the message in milliseconds in the textbox **Time to Live**.You can set "TimeToLive" header value in JMS Target activity based on the value of "JMSExpiration" header value received in input JMS message. These parameters have the following relation:

JMSExpiration = currenttime + timeToLive.

> You can override the following JMS Target Message Properties at runtime:
>
> - Delivery Mode
> - Correlation iD
> - Message Priority
> - Reply To
> - Time to Live
> - Message Properties
>
> To know more on how to override these properties, refer to the **Overriding JMS Target Message Properties** section.

15.   Enter the name, type, and default value for JMS message parameters in the **Message Properties**table.For example, enter the following values:

Name	Type	Default Value
EmpId	Plain Text	101
EmpSalary	PlainText	$$var$$

> You can also add and delete rows in the Message Propertiestable as per your requirements.

> To learn about Advanced Properties refer to [Changing Advanced Properties](#) section.

16. Click the **Save** button.

> You can verify the JMS target activity at design time. For this, click **Test**. This verifies the values given in the *JMS Provider* and *Connection Type* fields.

OVERRIDING JMS TARGET MESSAGE PROPERTIES

Adeptia Suite allows you to either dynamically define the message properties or manually enter the message properties while creating the JMS Target activity. To manually enter the values, create a JMS Target activity; enter values of the following standard properties:

- Delivery Mode
- Correlation ID
- Message Priority
- Reply To
- Time to Live
- Message Properties

You can define the message properties in the following ways:

- Using hard coded values

  In this case define the exact value, which you want to set in the target JMS Server.

    - Override the properties with the properties of the source data.

  In this case, enable the Override checkbox of the properties, whose value you want to override from the corresponding value of the Source message.

    - Using Context variables

  While designing the process flow in process designer, if you use JMS Target activity, the context variable corresponding to each JMS Standard properties are automatically declared. You need to define the value of any of these variables using put-context-var action. For example if you want to override the value of Priority of the message, follow the steps below:

    a) Drag the put-context-var action in the process designer and place it before the JMS Target activity.

    b) Double click on the put-context-var action. The properties of the put-context-var action is displayed.

    c) Click *Edit.* The *Edit Context Variable* screen is displayed.

    d) Click the *New Variable Button.*

    e) Select the JMS target activity in the Activity Name drop-down list.

f)   Select the variable, which you want to override, from in the Variable Name drop-down list. For Example: jmsPriority.

g)   Enter the value of the variable, which you want to set in target JMS Message, in the Variable Value field. Here you can either define the exact value or the name of any variable. In case you want use variable name then enter the variable name as $$variablename$$ in the Variable value field.

h)   Click on Done button of Context Variable Information window, and Edit Context Variable Window.

i)   Save the Process flow.

Following table lists the JMS Target Message Parameters and corresponding context variables.

Table3: JMS Target Message Parameters and Corresponding Context Variable Names

JMS Target Property Name	Variable Name
Delivery Mode	Transaction.JMS.JMSDeliveryMode
Priority	Transaction.JMS.JMSPriority
Correlation ID	Transaction.JMS.JMSCorrelationID
Reply To	Transaction.JMS.JMSReplyTo
	Priority
Time to Live	Transaction.JMS.JMSExpirationTime

JMS Target Property Name	Variable Name
Message Properties	messagePropertiesXML
	To override the message properties, which are defined within the Message Properties table, you need to define the value of *messagePropertiesXML* in XML format as shown below:
	`<variables><variable><name>JMS_IBM_Character_Set</name> <type>plainText</type> <value><![CDATA[ISO-8859-5]]></value> </variable> </variables>`

SAMPLE PROCESS FLOWS TO PROCES JMS MESSAGE IN TRANSACTIONAL MODE

This section describes, how to create a process follow to fetch the data from Apche Active MQ Server using JMS Event and further put to another JMS Serer. This section also covers how to make this message transfer in transactional mode.

1. Create a JMS Event with Apache Active MQ Server with Connection Type as **Queue** and session as **Transactional**.

2. Create a process flow **(JTA Begin à JMS Source à Put Context Variableà JMS Target à JTA End)** (see Figure 283).
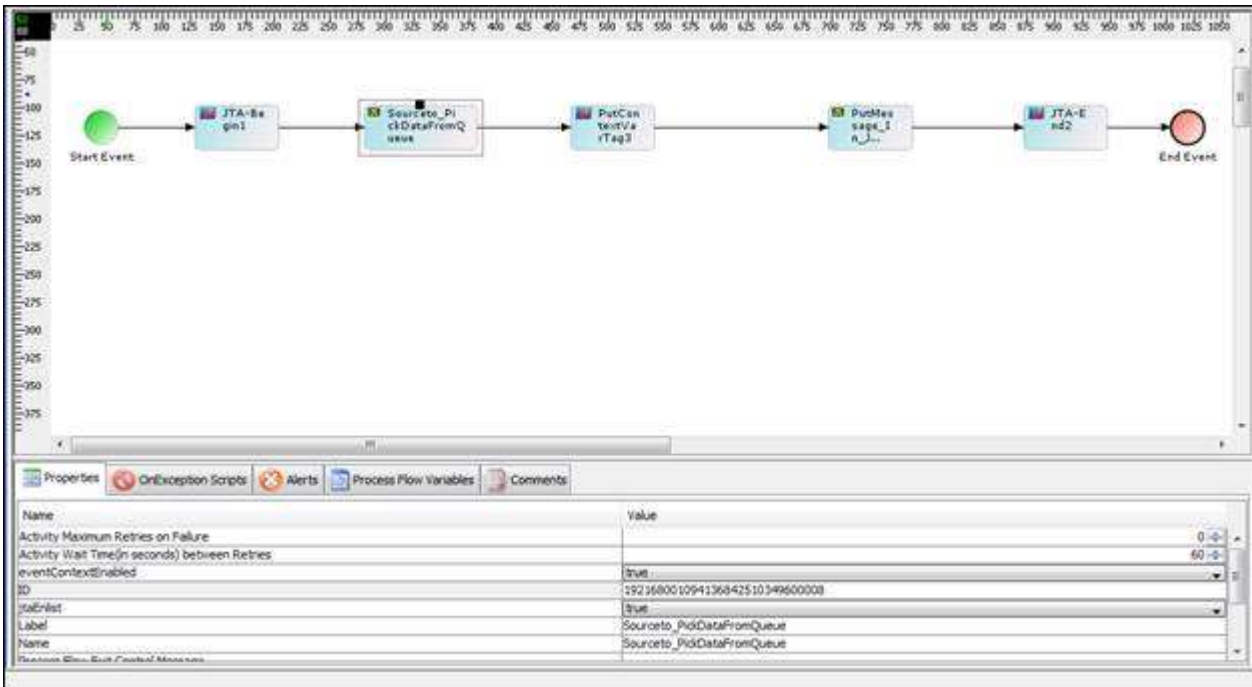
Figure 283: Sample Process Flow

3. Set the value of the following JMS Source properties to true:

   - **eventContextEnabled**
   - **jtaEnlist**

4. You can also override the JMS Target properties through Put Context Variables (see Figure 284).

Activity Name	Variable Name	Variable Value
PutMessage_In_JMSTarget	jmsCorrelationID	EmpDescription
PutMessage_In_JMSTarget	jmsPriority	7

Figure 284: Setting Context Variable

5. Bind the process flow with above-create JMS Event

6. Activate the JMS Event.

CREATING LAN FILE TARGET ACTIVITY

LAN File Target provides the ability to specify a target file location that is accessible on the network.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This section describes how to create a LAN Target activity using the following details as an example:

File Name	Employee_PersonalDetails.xls
File Path	\\FileServer\HR_Files\Employee
Transfer Type	Secure
File System	Windows
User Id	MyUserName
Password	Mypassword

Steps to create a LAN File Target Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** → **Target** and then click **LAN File**.

The *Manage LAN File Target* screen is displayed (see Figure 297).

Figure 297: Manage LAN File Target

3. Click the Create New link. The **Create LAN File Target** screen is displayed.

4. Enter the name and description for the new LAN File Target in the textboxes **Name** and **Description** fields respectively.

5. Enter the network path of the folder where you want the target file to be created in the textbox **File Path** field in the following format:

> \\hostname\folder name

However, if the respective drive does not contain the folder mentioned in the path then the creation of the new folder will depend on the value of the system property **abpm.target.createFolder** and on the option value selected from the new drop-down list **Auto folder Creation** added in the **Advanced Properties** section.

> To check or change the value of the application property **abpm.target.createFolder**, refer to the **Updating System Properties** section in Administrator Guide. The **Target Property** is present under the **Services** category. By default, the value of this property is set to **None**.

6. Enter the name of target file in the textbox **File Name**.

7. If you want to append date and time stamp in the target file name, then select the date and time stamp from the dropdown lists **Time Stamp**.

8. If you want that each target file created by this activity should have unique name, then select the **Create Unique File** checkbox. When this option is enabled, a 30 digit random number is appended in the file name.

9. Select the target file system, whether Windows or Unix from the dropdown list **File System**.

10. When Adeptia Suite is installed on Windows Operating System, LAN File Target uses windows service to connect to remote machine. It just connects once and uses the same connection with the same User ID and Password (which is stored in the cache) every time. If you want to enforce the validation of User ID and Password every time while accessing the remote machine, select the **Use VFS** checkbox.

11. If username and password is required to access the target location, select the **Secure** checkbox.

12. Enter the username and password in the textboxes **User ID** and **Password** fields respectively.

   Then re-enter the password in the textbox **Confirm Password** (see Figure 298).

Figure 298: Create LAN File Target

> To learn about Advanced Properties refer to Changing Advanced Properties section. To learn about appending property refer to Appending Data to an Existing Target File section.

13. Click **Advanced Properties** to expand the hierarchy. All items in **Advance Properties** are displayed.

A new drop-down list **Auto Folder Creation** has been added. This drop-down list has the following three options:

- None
- Yes
- No

By default, the option **None** is selected.

When the value of the system property **abpm.target.createFolder** is set to **Yes** and if the option value selected from the drop-down list **New Folder** is:

- **Yes**, then the new folder will be created.
- **No**, then the new folder will not be created and an error message will be displayed.

When the value of the system property **abpm.target.createFolder** is set to **No** and if the option value selected from the drop-down list **New Folder** is:

- **Yes**, then the new folder will be created.
- **No**, then the new folder will not be created and an error message will be displayed (see Figure 299).

Figure 299: Lan File Target Advance Properties

> If the option value selected from the drop-down list **New Folder** is **None**. In this case, **None** indicates that the folder will be created depending only on the value of the property **abpm.target.createFolder**.
>
> If **abpm.target.createFolder** is set to **Yes** then the folder will be created and if abpm is set to

> **No** then the folder will not be created irrespective of the option value selected from the drop-down list **New Folder**.

14. Click the **Save** button.

> ℹ️ You can verify the LAN File Target activity at design time. For this, click **Test**. This verifies the values given in the *File Path, User ID* and *Password* fields.
>
> When using a LAN File Target activity in a process flow, the *append* property is set to *False* by default. This implies that an existing target activity is overwritten by the new target activity. If you want to append the new target activity to the existing target activity, you need to set this property to *True*. However, this feature is supported for Excel and Text files only.

CREATING MAIL TARGET ACTIVITY

Mail Target provides the ability to send the data to any mail box.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This section describes how to create a Mail Target activity using the following details as an example:

Mail Server Type	SMTP
Outgoing Mail Server	smtp.mycompanydomain.com
Port	25
SSL Enabled/Disabled	Disabled
From Email ID	MyuserID@mycompanydomain.com
User Name required to send the mail	MyuserID@mycompanydomain.com
Mail box password	mypassword
Receiver Email ID	JohnSmith@SalesPartner.com
Subject	*EMPDetails*
Data Location (body/attachment)	Attachment
Attachment File Name	Employee_PersonalDetails.xls

Steps to create a Mail Target Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Configure → Services → Target** and then click **Mail**.

The *Manage Mail Target* screen is displayed (see Figure 300).

Figure 300: Manage Mail Target

3.   Click the Create New link. The **Create Mail Target** screen is displayed.

4.   Enter the name and description of the new Mail Target in the textboxes **Name** and **Description** respectively.

5.   Select the Internet standard protocol to be used for sending outgoing mails, from the dropdown list **Protocol**. You can select either the SMTP or the MAPI protocol. Based on the selected protocol, the default port number for that protocol is displayed in the *Port* field.

6.   Enter the outgoing mail (SMTP) Server address in the textbox **Outgoing Mail (SMTP) Server**.

> To send the mail through Microsoft Exchange Server use *MAPI* in *Protocol* dropdown list. To connect Adeptia Suite with Microsoft Exchange Server, you need to buy a third party tool called J-Integra for Exchange. J-Integra for Exchange is a high performance middleware bridge that enables Java Exchange interoperability. If you want to retrieve mails from an Exchange Server using J-Integra, Select MAPI in the *Protocol* dropdown list.
>
> If *MAPI* is selected in *Protocol* dropdown list:
>
> - Enter name of the exchange server in *Outgoing Mail Server* field
>
> - Enter the domain name in the *Domain* field
>
> - Enter the name of the CDO host machine in *CDO host machine* field. CDOConfig.exe is tool that comes with the J-Integra for Exchange SDK and is used for configuring CDO Host where CDO is configured is called CDO host machine.
>
> For detailed information about Jintegra for Exchange, refer to
>
> http://j-integra.intrinsyc.com/products/exchange/.

7.   Select the **Enable SSL** checkbox, if the specified outgoing mail server requires a secure connection.

8.   Enter the port of Outgoing Mail Server in the *textbox* **Port**.

9.   Enter the sender's Email-Id in the textbox **From (Email-Id)**.

10.   Enter the Email-Id(s) of the email recipients separated by commas in the textbox **To Email-Id(s) (comma separated)**.

11.   Enter the subject of Target email in the textbox **Subject**.

12.   Enter the username and password of Mail Server in the textboxes **User ID** and **Password** respectively.

Then, re-enter the password in the textbox **Confirm Password** (see Figure 301).

Figure 301: Create Mail Target

13. Select the content type of the outgoing message (as Plain or HTML) from the dropdown list **Message Content Type**.

14. You can change the priority of the mail. Select the priority of the mail from the **Priority** drop-down list, The mail, which will be sent by this mail target activity, will have the priority flag as selected in this drop-down list. This drop-down list has the following three options:

- Normal

- High

- Low

By default, the option **Normal** is selected.

15. Select the location of data in the mail whether it is to be sent as an attachment or in email body from the dropdown list **Data Location**.

16. If the data is to be sent as attachment, enter the name of the file in the textbox **File Name** (see Figure 302).

Priority	Normal
Data Location*	Attachment
File Name	purchaseorder.txt

Figure 302: Create Mail Target

> To learn about Advanced Properties refer to Changing Advanced Properties section.

17. Click the **Save** button.

> You can verify the mail target activity at design time. For this, click **Test**. This verifies the values given in the *Outgoing Mail (SMTP) Server, Port, User ID* and *Password* fields.

CREATING WEBDAV TARGET ACTIVITY

The WebDAV Target activity provides the ability to specify a WebDAV Server as a target.

This feature is available in:

Enterprise	Premier	Professional	Express
✓			

Steps to create WebDAV Target Activity:

1. On the Adeptia Suite homepage, go to **Configure** > **Services** > **Target** and then click **WebDAV**.

   The *Manage WebDAV Target* screen is displayed (see Figure 303).

Figure 303: Manage WebDAV Target

2. Click the **Create New** link. The **Create WebDAV Target** screen is displayed.

3. Enter the name and description of the new WebDAV target in the textboxes **Name** and **Description** fields.

4. Enter the name of WebDAV Server and port on which WebDAV Server is running in the textboxes **Server Name** and **Server Port** respectively.

5. If the WebDAV is secured i.e. username and password is required to access it, then check the **Secure** checkbox and enter the username and password of the WebDAV Server in the textboxes **User ID** and **Password** respectively.

> **i** If you are using WebDAV Server, which is built in with Adeptia Suite, the default Username is "Administrator" and the password is "indigo".

6. Re-enter the password in the textbox **Confirm Password**.

7. Enter the path of the target file in the textbox **File location**.

8. Enter the name of the target file in the textbox **File Name** (see Figure 304).

Figure 304: Create WebDAV Target Activity

> **i** Directory specified in the File location field, must be available in the WebDAV repository.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.

9. Click the **Save** button.

> **i** You can verify the WebDAV target activity at design time. For this, click **Test**. This verifies the values in the *Server Name* and *Server Port* fields and checks whether the file actually exists in the specified location.

USING WEB SERVICES

Web service is a method of communication that allows two application systems to exchange their data over the internet. The term Web services describes a standardized way of integrating Web-based applications. The software system that requests data is called a service requester, also called consumer, whereas the software system that would process the request and provide the data is called a service provider. There are two major types of Web services:

- SOAP Web services, in which the service may expose an arbitrary set of operations

- RESTful Web services, in which the primary purpose of the service is to manipulate XML representations of Web resources using a uniform set of stateless operations.

Adeptia Suite allows you to access any Web Service. You can send requests to any Web Service and receive its response through Adeptia Suite. The Adeptia Suite also allows you to publish your Web Services to provide access to others. We offer the following components that allow you to send request and receive response from any Web Service.

Components of Web Services

Web Services module provides two components:
- Consumer
- Provider

The *Consumer* component allows users to access any Web Service. Using the *Provider* component users can publish their Web Services for others to access. You can also restrict the access to these services to select users.

This section describes the following:

- Using Soap Web Service
- Using RESTful Web Service

USING SOAP WEB SERVICE

Simple Object Access Protocol (SOAP) is a standard protocol specification for message exchange based on XML. Communication between the web service and client happens using XML messages. You can create Consumer/Provider activities with the SOAP Web Service using Adeptia Suit.

Creating Web Service Consumer Activity

You can use Web Service Consumer activity to access any Web Service (internet/ intranet). You can use this activity to send request to and receive response from the Web Service. To create this activity, you need to have the WSDL or the endpoint of the Web Service, which you want to access.

In the Adeptia Suite, you will get **EasyWSDL Parser**, which is a new WSDL parser for Web Service Consumer activity. This EasyWSDL parser has the following additional benefits:

- It is more robust than WSDL4j
- It is more reliable than WSDL4j

The old WDSL parser (WSDL4j), is still there to provide you backwards compatibility. By default, the Adeptia Suite uses the EasyWSDL parser.

To use the WSDL4j parser, you need to change the **abpm.webservice.consumer.wsdlparser.iswsdl4j** to true. For details to configure this property, please refer to the [Configuring Adeptia Suite to use WSDL4j Parser](#) section.

Following are the key points that you should keep in mind while using the WS Consumer feature:

- When you use WSDL4j as your WSDL parser, then the process to create any new WS Consumer activity will remain the same as earlier.
- When you use EasyWSDL as your WSDL parser then:
    - Any new WS Consumer activity that you create will use EasyWSDL parser.
    - You don't have to select the Operation while creating the WS Consumer activity.
    - You don't have to create an XML Schema for this Consumer activity. You can directly load the WS Consumer activity, in the Data Mapper and select the operation in the Data Mapper.

        To know how to load a WS Consumer activity in the Data Mapper, refer to the [Loading Web Service Consumer in Data Mapper](#) section.
    - You cannot use the Web Service to create an XML Schema.
    - If you edit any existing WS Consumer activity in the Adeptia Suite V6.1 or above, that you made using an earlier version of the Adeptia Suite then, the Adeptia Suit will use WSDL4j parser to edit it.

> - If you create any WS Consumer activity using the WSDL4j parser then, the Adeptia Suite will always use that parser to edit the activity irrespective of the WSDL parser that is currently configured on the Adeptia Suite.
>
> - Similarly, if you create any WS Consumer activity using EasyWSDL parser then, the Adeptia Suite will always use that parser to edit the activity irrespective of the WSDL parser that is currently configured on the Adeptia Suite.

This feature is available in:

Enterprise	Premier	Profession	Express
✓	✓	✓	

Creating Web Service Consumer Activity using EasyWSDL Parser

This section explains how to create WS Consumer activity, when the Adeptia Suite is configured to use EasyWSDL parser. By default the parser is set as EasyWSDL.

Steps to create Web Service Consumer activity using EasyWSDL Parser

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** → **Web Services** and then click **Consumer**. This action will display you the *Consumer Manage* screen (see Figure 305).

Figure 305: Consumer Manage Screen

3. Click the **Create New** link. This action will display you the *New Web Service Consumer* screen (see Figure 306).

Figure 306: New Web Service Consumer Screen

4. Enter the name and description of the new activity in the **Name** and **Description** textboxes respectively.

5. In case the WSDL file contains characters that do not fall into the default character set encoding then, you can change it in the **Character Set Encoding** textbox. By default, this textbox displays the character set encoding that you have defined at the application level.

> ℹ️ You can check the Service Name and Bindings of a WSDL file to verify its character set encoding.
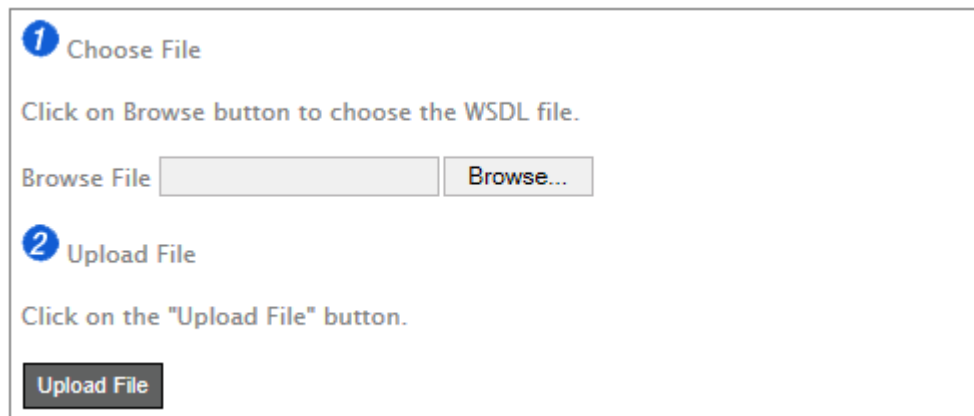
6. Ensure that the *Consumer Type* is **SOAP**.

7. Select the **URI Location** of the WSDL file. Select **HTTP** radio button if your WSDL file is on a HTTP location. If your WSDL file is on a local machine or on a LAN network then, select the **Local/LAN** radio button.

8. If you select the **HTTP** radio button in the previous step then, enter the HTTP URL in the **WSDL URL (HTTP URL)** field.

9. If your wsdl file is on local machine or on a LAN network then select **Local/LAN** radio button in the previous step.

10. In case your WSDL file is referring to another file, you can either choose an existing file reference activity from the **File References** drop-down list or click on the ✚ button to create a new file reference activity. You can also click on the 📝 button, if you want to update an existing file reference activity.

> ℹ️ To know how to create a file reference activity, please refer to the Creating a File Reference Activity section.

11. If your WSDL file is on a local network then enter its path in the **WSDL File Path (Local/Lan)** field. Click the **Browse WSDL** button to select the WSDL file path. This action will open the **Upload WSDL File** window (see Figure 307).

Figure 307: Upload WSDL File Window

12. Click the **Browse** button to choose the WSDL file and then click the **Upload File** button to upload the file (see Figure 308).

Figure 308: Create Web Service Consumer Activity

13. Click the **Next** button. This action will show you the *Web Service Consumer* screen (see Figure 309).

Figure 309: Select binding for Consumer Activity Screen

If there is only one service name in your WSDL file then the Adeptia Suite will show that service name as selected. If there are multiple service names in your WSDL file then the Adeptia Suite will show you all the services in a drop-down list options in the **Service Name** field. In this case, you have to select the service that you want.

When you select the service name, it will then populate the **Binding** field automatically. This field displays only those bindings, that correspond to the service name, which you will select in the **Service Name** field. If in the WSDL definition file there is only one binding for any service name then, by default you will see only that binding in the **Binding** field. However, if there are multiple bindings for a service name then, you will see all the bindings in the drop-down list.

A lot of WSDL files by default come with a dummy endpoint that do not point to the actual location of the service, but instead contains a dummy link, for example - http://example/servicename. This is because sometimes the WSDL file describes what the service looks like, but do not point where it is located. Therefore it should be possible to override the endpoint from within the Web Service Consumer configuration instead of having to do via the Process Designer.

14. Click the **Next** button. This action will show you the **Consumer Standard Properties**, **WSA Addressing Properties**, and **Advanced Properties** (see Figure 310).

Figure 310: Web Service Consumer Properties Screen

15. If the Web Service that you want to access is secured then, select a security policy activity from the **Security Policy** dropdown list.

> You may also override the security policy activity that is being called within a consumer activity. For this, there is a context variable, *securityPolicy*. It is accessible via *put-context-var* action of a process flow designer. For details, refer to the following sections:
>
> - *Overriding an activity using put-context-var*
> - Creating Security Policy for Web Services
>
> To learn about its Advanced Properties, please refer to the Changing Advanced Properties section.

16. Click the **Save** button.

Loading the Web Service Consumer Activity in Data Mapper

Once you create a Web Service Consumer activity on easy parser, you need to pass a valid input request to the Web Service Consumer. To generate the input request as per the Web Service, you can directly load the WS Consumer activity into the Data Mapper. For example, if you have a source data in text format and you want to pass this data to Web Service Consumer as an input request then, you need to perform the following steps:

- Create a Text Schema
- Open Data Mapper
- Load Text Schema at source side
- Load WS Consumer Activity at target side
- Select an operation for the Web Service and the XSD type as *Input*
- Map the fields to generate a request for the Web Service

> If you have the request XML with you then, you can directly pass it to the WS Consumer activity using any Source activity. In this case, you do not have to create any mapping activity.

When you want to pass the response of the Web Service, you need to load the WS Consumer activity at the source side of the Data Mapper. For example, if you want to convert the Web Service response to text format then, you need to perform the following steps:

- Create a Text Schema
- Open Data Mapper
- Load WS Consumer activity at source side
- Select require operation for the Web Service and select XSD type as *Output.*
- Load Text Schema at target side
- Map the fields to convert the response into the target format

> Only by using EasyWSDL parser, you can load WS Consumer activities directly into the Data mapper. If you use WSDL4j parser to create a WS Consumer activity then, you need to create an XML Schema and then load it into the Data Mapper.

Steps to Load the Web Consumer Activity into Data Mapper

1. Create a new data mapping activity for the respective Web Service Consumer activity. While loading the schema, select the **WS Consumer** tab from the **Schema Type** column in the **Select Schema** dialog box (see Figure 311).
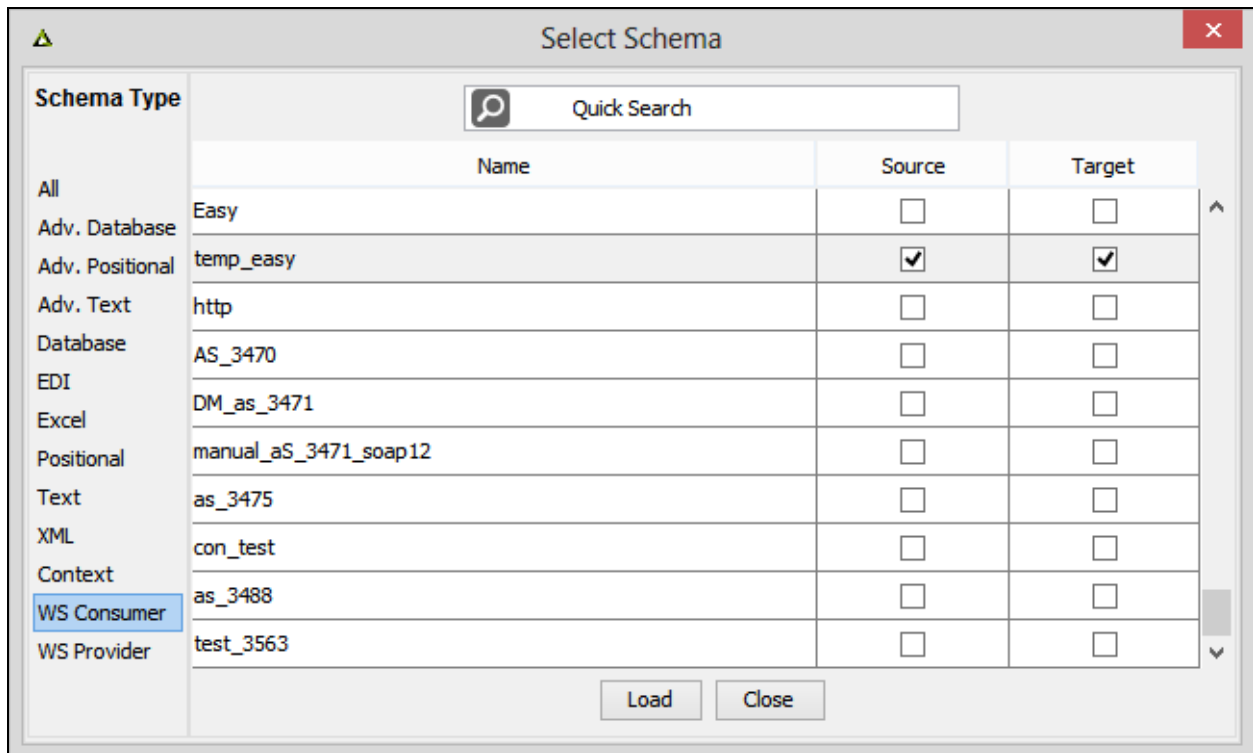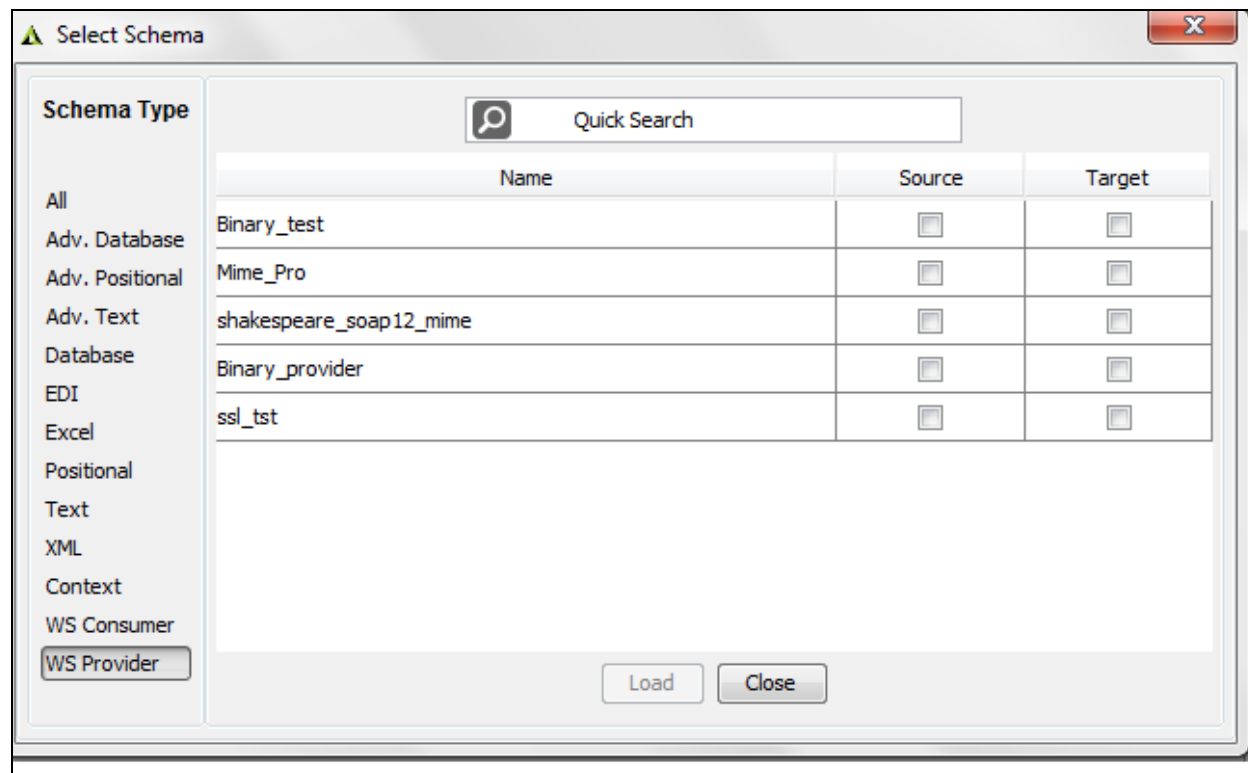
Figure 311: Select Schema

> **i** Select the **WS Provider** tab from the **Schema Type** column in the **Select Schema** dialog box, if you want to load WS Provider activity in the Data Mapper.

2.   Click the **Load** button. This action will display you the **Select Operation Dialog** box.

3.   Select an operation from the **Operation** drop-down list. If there is only one operation for this WS Consumer activity, then the Adeptia Suite will show you only that operation as selected (see Figure 312).
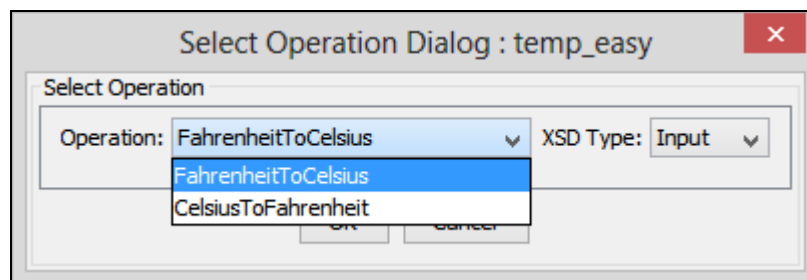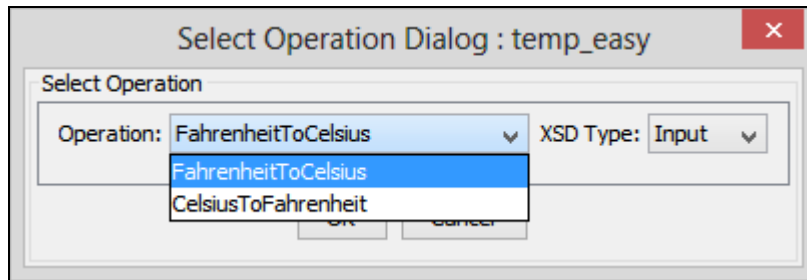

Figure 312: Select Operation Dialog Box

4.   Select the XSD type from the **XSD type** drop-down list (see Figure 313).
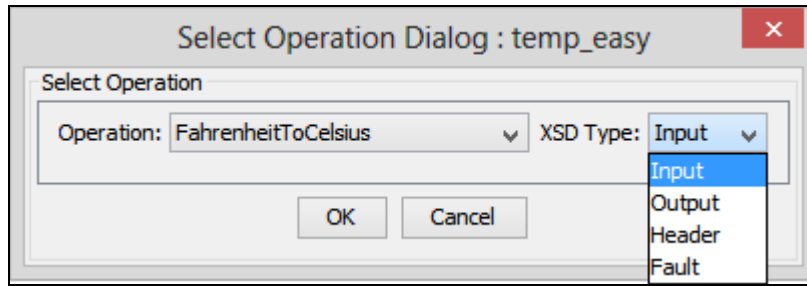
Figure 313: Select Operation Dialog

5. Click **OK** to save the changes. This will upload the WS Consumer schema in the Data Mapper (see Figure 314).
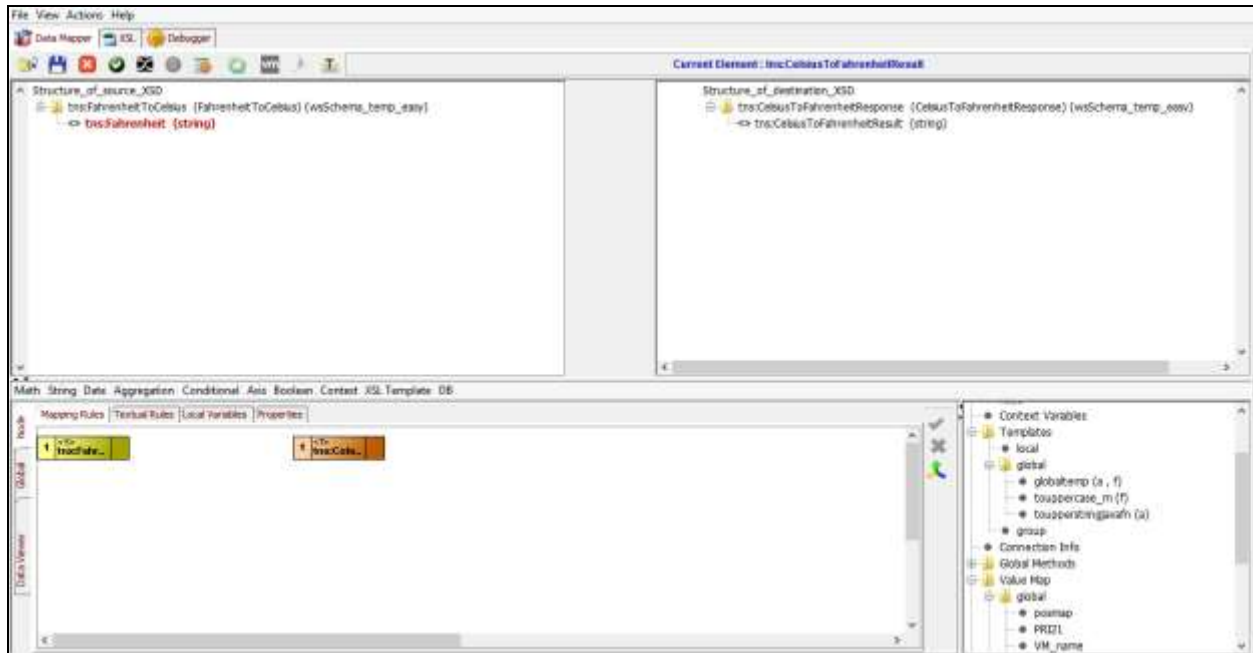
Figure 314: Data Mapper

Creating Web Service Consumer Activity using WSDL4j Parser

This section explains:

- [Configuring Adeptia Suite to use WSDL4j parser](#)
- [Creating Web Service Consumer activity using WSDL4j](#)

Configuring Adeptia Suite to use WSDL4j Parser

This section explains how to configure the Adeptia Suite to use WSDL4j parser.

Steps to configure Adeptia Suite to use WSDL4j parser

1. On the Adeptia Suite home page, click the **Administer** tab and then click at the **Setup** menu. This action will show you all the options of the **Setup** menu (see Figure 315).
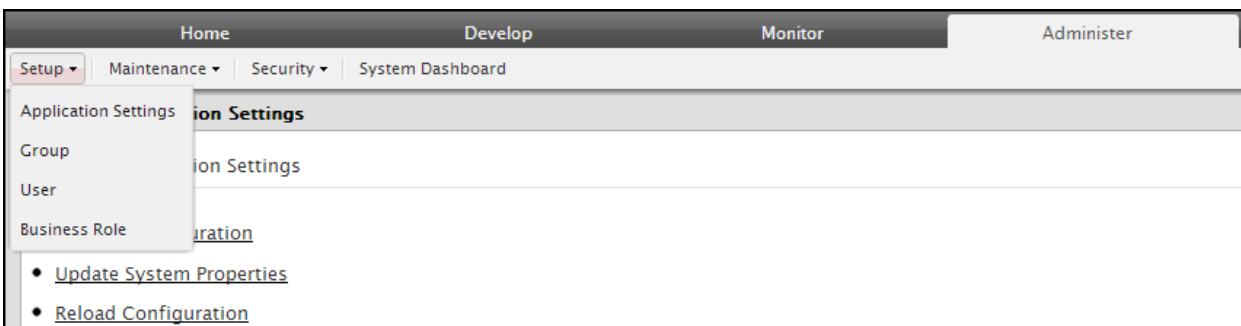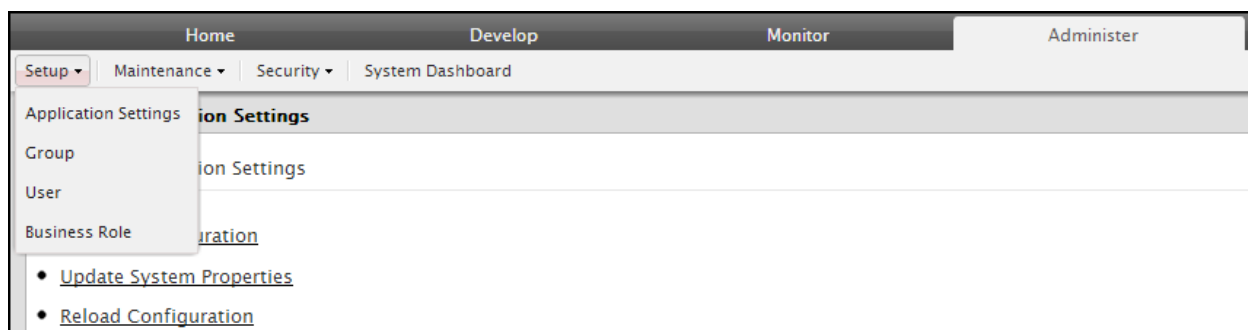
Figure 315: Set Up Menu Options

2.   Select the **Application Settings** option. This action will show you the **Application Settings** screen (see Figure 316).
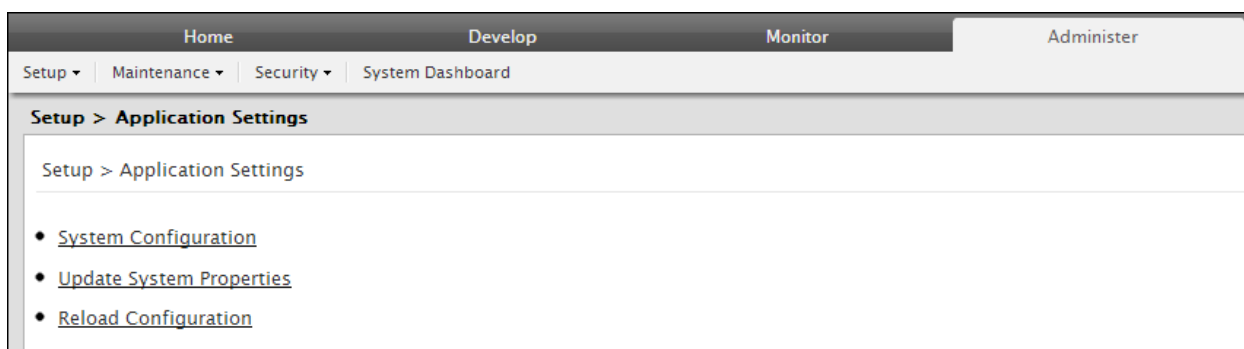
Figure 316: Application Settings

3.   Click the **Update System Properties** link. This action will show you the **Update System Properties** page.

4.   Click **Services** to expand the **Services** hierarchy (see Figure 317).
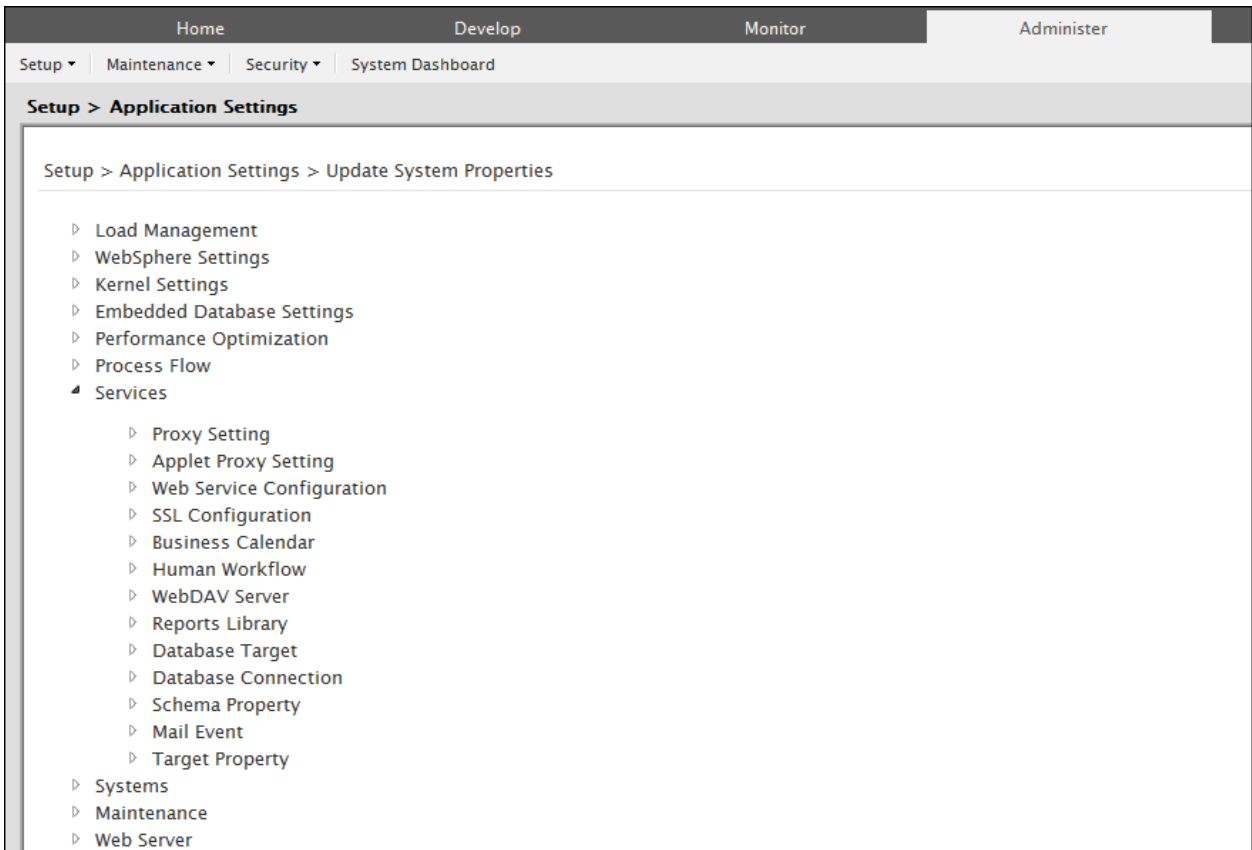
Figure 317: Application Setting Page

5. Expand **Web Service Configuration**.

6. Change the value of the **abpm.webservice.consumer.wsdlparser.iswsdl4j** property to *true* (see Figure 318).
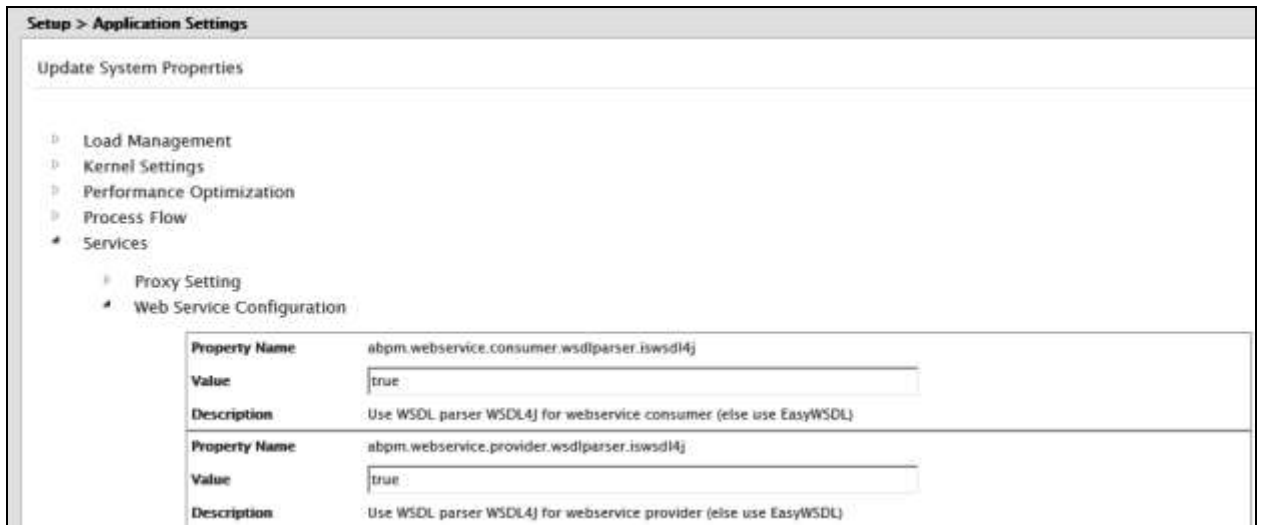
Figure 318: Web Service Configuration Properties

7. Click the **Save** button to save the web service configuration settings.

> ℹ️ If you want to re-enable the new parser for WS Consumer activity, EasyWSDL parser, then, simply set the value of the **abpm.webservice.consumer.wsdlparser.iswsdl4j** property to *false*.

Creating Web Service Consumer Activity using WSDL4j Parser

This section covers the steps to create Web Service Consumer Activity using wsdl4j parser. Adeptia Suite also supports easy WSDL parser from version 6.0 onwards.

Steps to create a Web Service Consumer Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Configure → Services → Web Services** and then click **Consumer**. This action will show you the *Manage Consumer* screen (see Figure 319).

Figure 319: Manage Consumer Page

3. Click the **Create New** link. This action will show you the *New Web Service Consumer* screen.

4. Enter the name of the new WS Consumer activity in the **Name** field. Then, enter the description for this activity in the **Description** textbox.

5. Check the URI checkbox in the *Web Service Definition Location* field (see Figure 320).

Figure 320: Locate WSDL

6. Select a consumer type from **Consumer Type** radio button.

> ℹ️ • Select *SOAP,* when you want to access any SOAP-based Web Service.
> To know how to create a Web Service Consumer activity to access any RESTful Web Service,

7. Select the location of URI.

> In the URI Location, select:
>
> - HTTP, if the WSDL file is on a HTTP Site.
> - Local/LAN, if the WSDL file is on a Local/LAN environment.

8. Click the **Browse WSDL** button. This action will show you the **Upload WSDL File** screen (see Figure 321).

> If, for the **URI Location** field, you check the **HTTP** radio button then skip the steps 8 - 9 and continue from step 10.

Figure 321: Upload WSDL File

9. Click the **Browse** button to select the WSDL file. Then click the **Upload File** button. This action will upload the file and display it in the **WSDL File Path (Local/LAN)** textbox on the **Web Consumer** screen (see Figure 322).

Figure 322: Uploaded WSDL File

10. Select the *Secure* checkbox if the path in the **WSDL URL** field is secured. Then enter the user ID and password in the **User ID** and **Password** field respectively.

> ℹ️ If, for the **URI Location** field, you check the **Local/Lan** radio button then follow steps 8 - 9 and skip step 10.

11. Click the **Next** button. This action will show you the *New Web Consumer* screen (see Figure 323).

Figure 323: Select Web Service Operation

12. Select the name of service from the **Service Name** dropdown list.

13. Select a port type from the **Port Type** dropdown list. A port type can support multiple ports. This selection populates the options in the **Ports** dropdown list.

14. Select a port for the port type from the **Ports** dropdown list.

15. Select an operation from the **Operation(s)** dropdown list. This selection will automatically display you the name of the style in the **Style Name** dropdown list.

> When you select an operation then the **Style Name** field gets its data automatically. There are two types of styles in this field:
>
> - **Document**: When a WS Consumer invokes a *document* style Web service, the consumer typically sends it an entire document, such as a purchase order, rather than a discrete set of parameters. The Web service accepts the entire document, processes it, and may or may not return a result document. In a *document* style, the input can be read from context or a stream coming from another activity. Similarly, output can be set to context or the WS Consumer activity can generate it as a stream to other activities. In case the output is set to context then, the WS Consumer activity creates a variable in the context with the name as specified in the **Output Parameter Name** field. The WS Consumer activity then sets the output into that variable. Additionally, you can use the XSD of the Web Service Consumer activity to create an XML schema.
>
> - **rpc**: In *rpc* style, the WS Consumer invokes a Web Service and sends some parameter values to it. The Web Service then executes few methods using these parameter values and sends back the result. In *rpc* style, the WSDL4j parser creates a variable in the context with a name same as in the **Output Parameter Name** field and then the output is set into that variable. This style does not generate a stream.
>
> In the current example, the Web Service is of *doc* style.

16. Select an operation from the **Operation** dropdown list.

17. Click the **Next** button. This action will show you the **Web Service Consumer** screen (see Figure 324).

Figure 324: Enter Input and Output Parameters

18. Select a security Policy from the dropdown list if required.

> You may also override the security policy activity that is being called within a consumer activity. For this, there is a context variable, *securityPolicy*. It is accessible via *put-context-var* action of a process flow designer. For details, refer to the following sections:
>
> - *Overriding an activity using put-context-var*
> - Creating Security Policy for Web Services
>
> To learn about its Advanced Properties, please refer to the Changing Advanced Properties section.
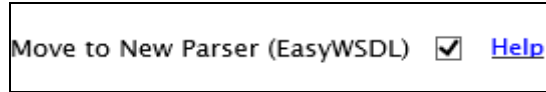
19. Click the **Save** button.

> In case you want to update your existing Web Service Consumer Activity using EasyWSDL parser then please refer to the Updating Existing Web Service Consumer Activity Using EasyWSDL Parser section.

Updating WSDL4j Web Service Consumer Activity to Use EasyWSDL Parser

If you want to update your existing WS Consumer activity (created using wsdl4j parser) with the new parser (EasyWSDL Parser) then you can do that by following the steps mentioned below:

Steps to Use EasyWSDL Parser for Existing Web Service Consumer Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.
2. Go to **Services → Web Services** and then click **Consumer**.
3. Click on the existing activity that you want to parse using EasyWSDL parser.
4. Check the Move to New Parser (EasyWSDL) checkbox (see Figure 325).

Move to New Parser (EasyWSDL) ☑ Help
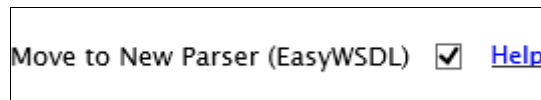
Figure 325: Move To EasyWSDL Parser

5. Follow the steps of the wizard and then click the **Save** button to save your activity.

> The Help link beside the **Move to New Parser (EasyWSDL)** checkbox provides you with some additional information about the parser.

Using Web Service Addressing

Web Services Addressing or **WS-Addressing** allows Web Services to communicate addressing information by providing a standard way to include message routing data within the SOAP headers.

Adeptia Suite allows you to use WS-Addressing at the WS Consumer Activity level. To enable it in a WS Consumer activity, you can either dynamically define the message addressing properties or manually enter them while creating the activity.

If you want to manually enter the values, create a WS Consumer activity, expand the WS-Addressing properties, and select the **Enable WS-A addressing** check box. Note that each parameter of a WS-Addressing property has a corresponding **Override** checkbox. If you select that checkbox, then the WS Consumer activity will use the values or parameters in the corresponding context process flow and would ignore the parameters or values in the text boxes. However, if you do not select this checkbox then the WS Consumer activity will use the values or parameters of this section for the respective WS Consumer Activity.

Steps to Use Web Service Addressing (WS-Addressing)

1. To use WS-Addressing, while creating Web Service Consumer activity please expand **WS-A addressing properties** (see Figure 326).

Figure 326: Define WS-Addressing Parameter

2. Check the **Enable WS-A addressing** check box and define all the parameters.

3. If you want to override WS-Addressing Parameters' values dynamically then you need to check the "Override" checkbox.The following table lists all the WS-A Parameters and their respective context variables.

Table 1: WS-Addressing Parameter and Corresponding Variable

WS-Addressing Parameters	Variable Name
Must Understand	WSMUSTUNDERSTAND
WS-A Version	WSAVERSION
Action	WSACTION
To	WSTO
Reply To	WSREPLYTO
Reply To Reference Parameters	WSREPLYTOREFERENCEPARAMETERS

WS-Addressing Parameters	Variable Name
Message ID	WSMESSAGEID
From	WSFROM
Fault To	WSFAULTTO
Fault To Reference Parameters	WSFAULTTOREFERNCEPARAMETER
Relates To	WSRELATESTO
Relationship Type	WSRELATIONSHIPTYPE

> **i** To override the WS-Addressing parameter, you need to set the value of corresponding variables within the process flow.

Creating Web Service Provider Activity

You can use the Web Service Provider activity to publish your web services so that the web service consumers can access it. Once you publish a Web Service provider activity, it will create a WSDL file, which will be available to the Adeptia Suite users. The user can then use this WSDL to invoke the Web Service.

From Adeptia Suite 6.1 onwards, you will get EasyWSDL parser for Web Service Provider activity. This EasyWSDL parser has the following additional benefits:

- It is more robust than WSDL4j
- It is more reliable than WSDL4j

By default, the Adeptia Suite will use the EasyWSDL parser. However, the WSDL4j parser is still there for backwards compatibility.

To use the WSDL4j parser, you need to change the **abpm.webservice.provider.wsdlparser.iswsdl4j** to true. For details to configure this property, please refer to the [Configuring Adeptia Suite to use WSDL4j Parser](#) section.

Following are the key points that you should keep in mind while using the WS Provider feature:

- When you use WSDL4j as your WSDL parser, then the process to create any new WS Provider activity will remain the same as earlier.
- When you use EasyWSDL as your WSDL parser then:
  - Any new WS Provider activity that you create will use EasyWSDL parser.
  - You don't have to create an XML Schema for this Provider activity. You can directly load the WS Provider activity, in the Data Mapper, and select the operation in the Data Mapper.

To know how to load a WS Provider activity in the Data Mapper, refer to the Loading Web Service Provider in Data Mapper section.

- You cannot use the Web Service Provider to create an XML Schema.

- If you edit any existing WS Provider activity in the Adeptia Suite, that you made using an earlier version of the Adeptia Suite then, the Adeptia Suit will use WSDL4j parser to edit it.

>
> - If you create any WS Provider activity using the WSDL4j parser then, the Adeptia Suite will always use that parser to edit the activity irrespective of the WSDL parser that is currently configured on the Adeptia Suite.
>
> - Similarly, if you create any WS Provider activity using EasyWSDL parser then, the Adeptia Suite will always use that parser to edit the activity irrespective of the WSDL parser that is currently configured on the Adeptia Suite.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓		

Creating Web Service Provider activity using EasyWSDL parser

This section explains how to create WS Provider activity, when you configure the Adeptia Suite to use EasyWSDL parser.

Steps to create Web Service Provider activity using EasyWSDL Parser

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Web Services** and then click **Provider**.

   This action will show you the *Manage Provider* screen (see Figure 327).

Figure 327: Manage Web Service Provider Activity

3. Click the **Create New** link. This will show you the **New Web Service Provider** screen.

New Web Service Provider

⊿ Standard Properties

Name*	
Description*	
Character Set Encoding*	ISO-8859-1	[Refresh]
Publish Type	⦿ SOAP ○ REST
Upload WSDL*	No ▼
Operation Name*	doGet
Request Service Name*	
Service Location*	services
Enable SSL	☐
Select Port	8080 ▼

This Web Service will be published without SSL. In case you want to define a new port then you need to add SelectChannelConnector (refer to the section Connector's definition in jetty.xml).

Soap Version*	SOAP 1.1 ▼
Process Flow Name*	-- Select Process Flow -- ▼
Input XML Schema*	None ▼ [Select Root]
Output XML Schema	None ▼ [Select Root]
Input Variable Name*	
Output Variable Name	
Security Policy	None ▼
Enable Attachment	☐

▷ WS-A Addressing Properties

▷ Advanced Properties

* Mandatory fields.

[Save]

4. Enter the name and description of the new Web Service Provider activity in the **Name** and **Description** textboxes respectively.

> ℹ In case the Web Services Provider activity contains characters which falls in character set encoding, other than the default character set encoding, then you can change this encoding in the **Character Set Encoding** textbox. By default, this textbox will display you the character set encoding that you have defined at the application level.

5. Select the type of web service that you want to publish from the **Publish Type** radio button.

> ℹ
> - Select SOAP, when you want to publish a SOAP-based web service.
> - Select REST, when you want to publish a RESTful web service.
>
> To know how to create a Web Service Provider activity to access a RESTful web service, refer to the Creating RESTful Web Service Provider Activity section.

6. If you want to create this activity by uploading a WSDL file then, select **Yes** in the **Upload WSDL** drop-down list. Otherwise, select **No**. The default value of this drop-down list is **No.**
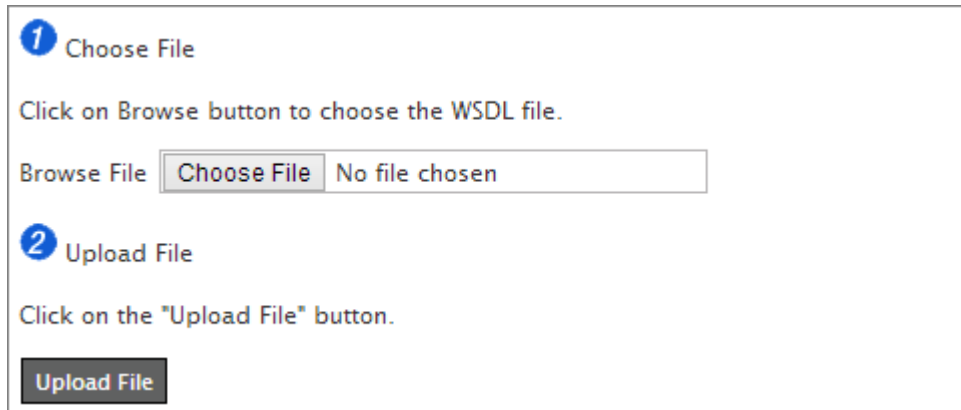
> ℹ️ Skip step 7 – 11 and continue from step 12 if you select **No** in the **Upload WSDL** drop-down list.

7. If you select **Yes** in the **Upload WSDL** drop-down list then, you can upload your own WSDL file.

8. If WSDL file is referring to another WSDL or XSD file then you can either choose an existing file reference activity from the **File References** drop-down list or click on the ➕ button to create a new file reference activity. You can click on the 📝 button, if you want to update an existing file reference activity.

> ℹ️ To know how to create a file reference activity, please refer to the Creating File Reference section.

9. Click the **Browse WSDL** button and upload the WSDL file that you want to use while creating your Web Service Provider activity. This action will show you the *Upload WSDL File* screen (see Figure 328).

Figure 328: Upload WSDL

10. Click the **Choose File** button, select the WSDL, and then click the **Upload File** button. This action will upload your WSDL file (see Figure 329).

Figure 329: Create Web Service Provider

> If there is only one service name in your WSDL file then the Adeptia Suite will show that service name as selected. If there are multiple service names in your WSDL file then the Adeptia Suite will show you all the services in a drop-down list options in the Service Name field. In this case, you have to select the service that you want.
>
> When you select the service name, it will then populate the Binding field automatically. This field displays only those bindings, that correspond to the service name, which you will select in the Service Name field. If in the WSDL definition file there is only one binding for any service name then, by default you will see only that binding in the Binding field. However, if there are multiple bindings for a service name then, you will see all the bindings in the drop-down list.

11. Select a mode of configuration from the *Configuration Mode* drop-down list.

> - *Configuration Mode* can be either: For All Operation: In case you want to select just one process flow to invoke any operation then select this option. However, you can execute the process flow only when you invoke an operation.
> - *Per Operation*: In case you want to select multiple process flows for invoking different operations then select this option. Here you can also leave any operation unbound. If you invoke any unbound operation then, you will see a "Requested Operation is not implemented" error message.

12. Enter the request service name, by which you want to publish your web service, in the **Request Service Name** text box (see Figure 330).

Figure 330: Create Web Service Provider

13. Select the SOAP version from the **Soap Version** drop-down list.

14. Select the process flow, which you want to publish as web service from the **Process Flow Name** dropdown list.

15. Select an input XML schema from the **Input XML Schema** dropdown list. This XML Schema will contain the XML that the Web Service provider activity will input.

16. Select the output XML schema from the **Output XML Schema** dropdown list.

> In case an XML Schema has multiple roots then, click the **Select Root** button and select a root.

> Skip step 12-16 and continue from step 17 if you have selected **Yes** in the **Upload WSDL** drop-down list .

Figure 331: Create Web Service Provider

17. Enter the input and output variables in the **Input Variable** and **Output Variable** textboxes respectively

> ℹ️ By default, the request service will be in the services/<folder name>. You can change this location and provide a new location for accessing the web service.

> ℹ️ If you want your WS Provider activity to offer a SSL security then check the **Enable SSL** checkbox.

18. Select the security policy activity from the **Security Policy** dropdown list if required (see Figure 331).

> ℹ️ - To know how to create a security policy, please refer to the Creating Security Policy for Web Services section.
> - To learn about its Advanced Properties, please refer to the Changing Advanced Properties section.

19. If you want to extract attachments from the request and send it with your response then you must check the **Enable Attachment** checkbox. For more information on this refer Using Attachments in Web Services section (see Figure 332).

Figure 332: Create Web Service Provider

20. Click the **Save** button.

> The following context variables are the parts of context info of the process flows, which are published by the Web Service Provider.
>
> You may now access:
>
> - **ClientIP**: If you want to know the IP address of the clients who are accessing your web service.
> - **WsProviderTypeId**: If you want to know the Type Id of your web service provider activity.

Loading the Web Service Provider Activity in Data Mapper

This section explains how to Load the Web Service Provider Activity into Data Mapper.

Steps to Load the Web Service Provider Activity into Data Mapper

1. Create a new data mapping activity for the respective Web Service Provider activity. While loading the schema, select the **WS Provider** tab from the **Schema Type** column in the **Select Schema** dialog box (see Figure 333).

Figure 333: Select Schema

9. Click the **Load** button. This action will display you the **Select Operation Dialog** box.

10. Select an operation from the **Operation** drop-down list. If there is only one operation for this WS Provider activity, then the Adeptia Suite will show you only that operation as selected (see Figure 334).

Figure 334: Select Operation Dialog Box

11. Select the XSD type from the **XSD type** drop-down list (see Figure 335).
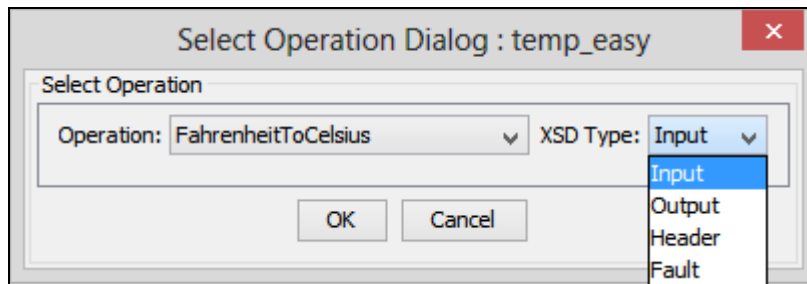
Figure 335: Select Operation Dialog

12. Click **OK** to save the changes. This will upload the WS Provider schema in the Data Mapper (see Figure 336).
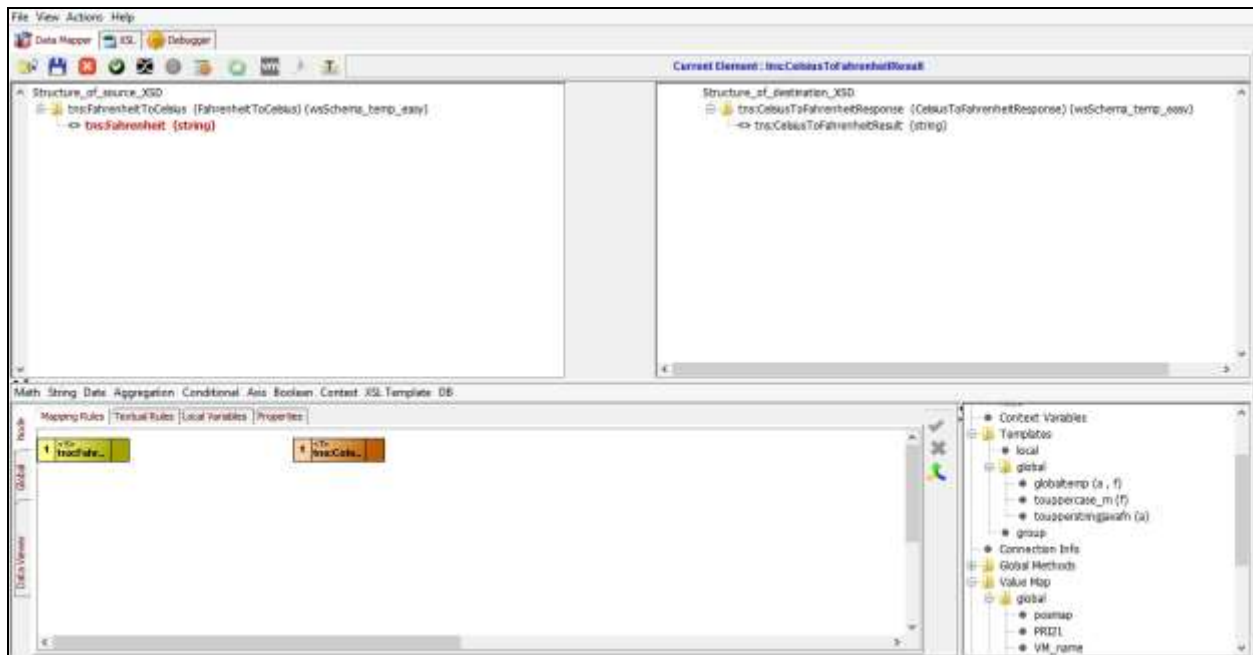
Figure 336: Data Mapper

Creating Web Service Provider Activity using WSDL4j Parser

This section explains how to create WS Provider activity, when you configure the Adeptia Suite to use WSDL4j parser.

Configuring WSDL4j Parser for Web Service Provider

This section explains how to configure the WSDL4j Parser for Web Service Provider. Adeptia Suite also supports easy WSDL parser from version 6.1 onwards.

Steps to configure WSDL4j Parser for Web Service Provider

1. On the Adeptia Suite home page, click the **Administer** tab and then click at the **Setup** menu. This action will show you all the options of the **Setup** menu (see Figure 306).

Figure 306 : Set Up Menu Options

2. Select the **Application Settings** option. This action will show you the **Application Settings** screen (see Figure 307).
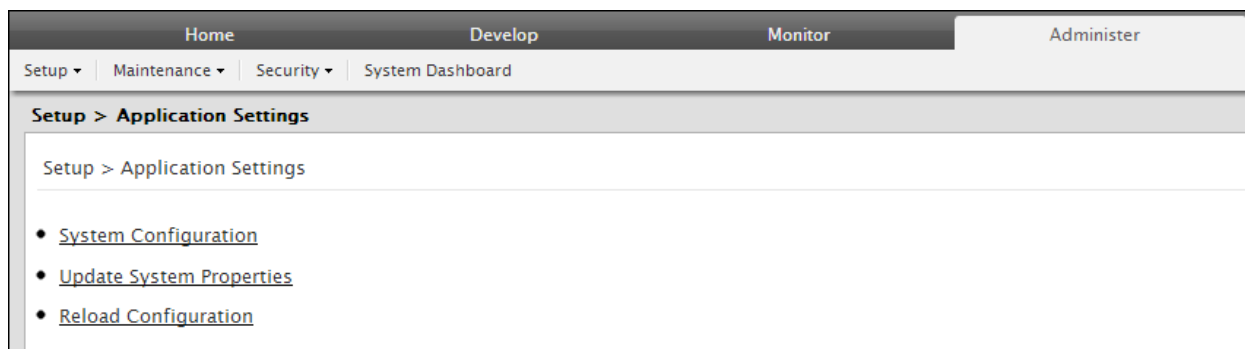
Figure 307 : Application Settings

3. Click the **Update System Properties** link. This action will show you the **Update System Properties** page.

4. Click **Services** to expand the **Services** hierarchy (see Figure 308).
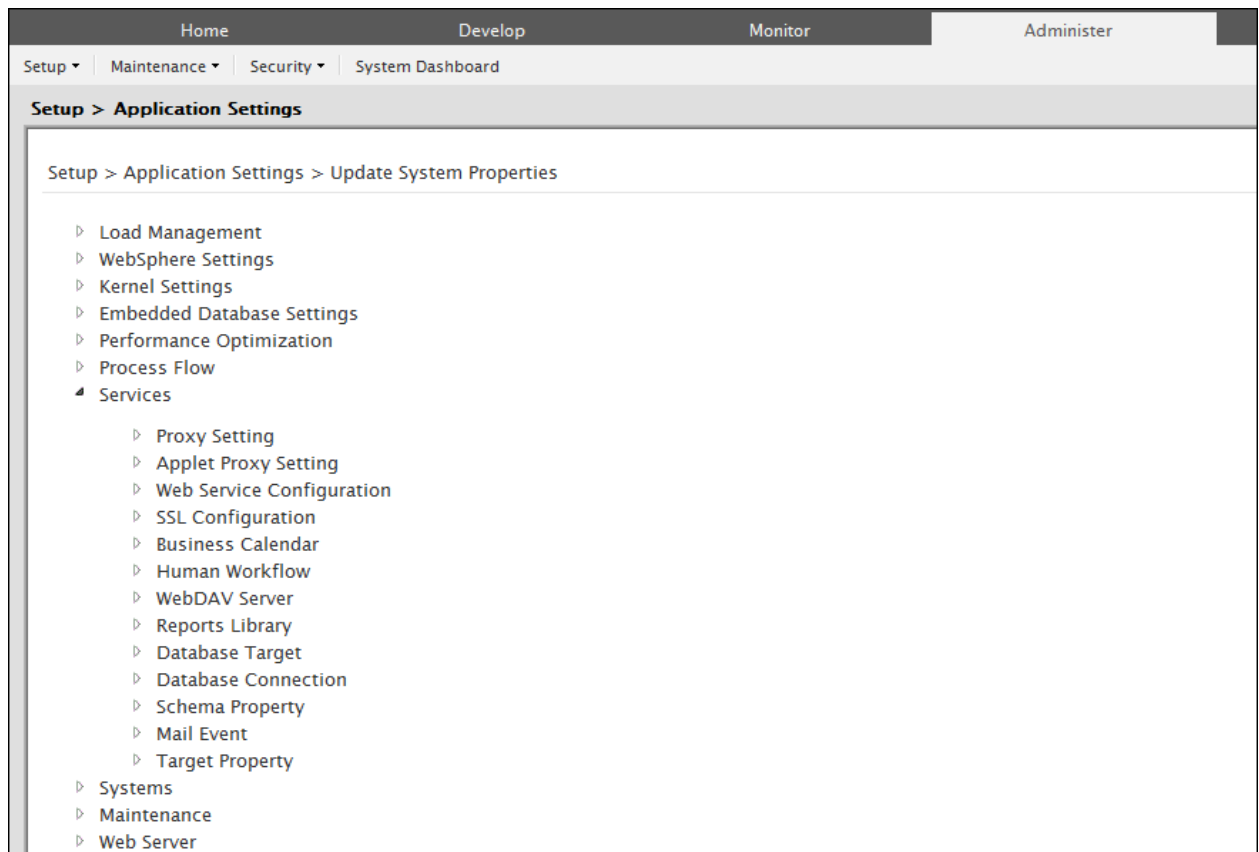
Figure 308: Application Setting Page

5. Expand **Web Service Configuration**.

6. Change the value of the **abpm.webservice.provider.wsdlparser.iswsdl4j** property to *true* (see Figure 316).
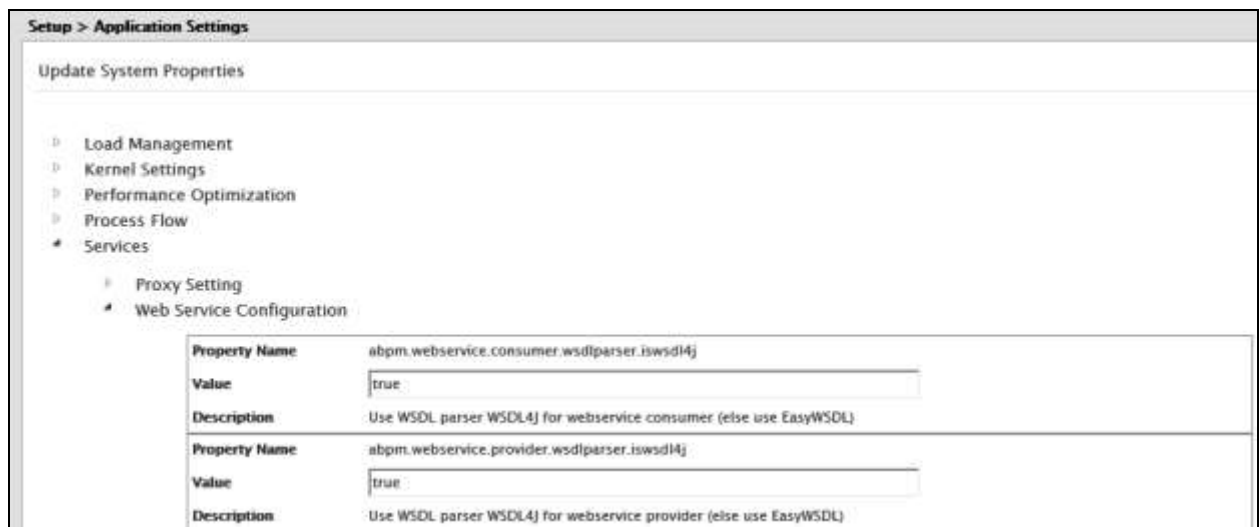
Figure 309: Web Service Configuration Properties

7. Click the **Save** button to save the web service configuration settings.

> **i** If you want to re-enable the new parser for WS Provider activity, EasyWSDL parser, then, simply set the value of the **abpm.webservice.provider.wsdlparser.iswsdl4j** property to *false*.

Steps to create a Web Service Provider Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Web Services** and then click **Provider**. This action will show you the *Manage Provider* screen (see Figure 337).

Figure 337: Manage Web Service Provider Activity

3. Click the **Create New** link. This will show you the **New Web Service Provider** screen.

4. Enter the name and description of the new Web Service Provider activity in the **Name** and **Description** textboxes respectively.

> ℹ️ In case the Web Services Provider activity contains characters which falls in character set encoding, other than the default character set encoding, then you can change this encoding in the **Character Set Encoding** textbox. By default, this textbox will display you the character set encoding that you have defined at the application level.

5. Select the type of web service that you want to publish from the **Publish Type** radio button.

> ℹ️ 1. Select *SOAP,* when you want to publish a SOAP-based web service.
> 2. Select *REST*, when you want to publish a RESTful web service.
>   To know how to create a Web Service Provider activity to access a RESTful web service, refer to the Creating RESTful Web Service Provider Activity section.

6. If you want to create this activity by uploading a WSDL file then, select **Yes** in the **Upload WSDL** drop-down list. Otherwise, select **No**. The default value of this drop-down list is **No**.

> Skip step 7 – 12 and continue from step 13 if you select **No** in the **Upload WSDL** drop-down list.

8. If you select **Yes** in the **Upload WSDL** drop-down list then, you can upload your own WSDL file.

9. Click the **Browse WSDL** button and upload the WSDL file that you want to use while creating your Web Service Provider activity. This action will show you the *Upload WSDL File* screen (see Figure 338).

Figure 338: Upload WSDL

10. Click the **Choose File** button, select the WSDL, and then click the **Upload File** button. This action will upload your WSDL file (see Figure 329).

11. Select the service name, ports, and port type from the respective drop-down list (see Figure 339). Along with this, you will get a list of operations to select the process flow for those operations.

Figure 339: Create Web Service Provider

12. Select a mode of configuration from the *Configuration Mode* drop-down list.

> - *Configuration Mode* can be either: For All Operation: In case you want to select just one process flow to invoke any operation then select this option. However, you can execute the process flow only when you invoke an operation.
> - *Per Operation*: In case you want to select multiple process flows for invoking different operations then select this option. Here you can also leave any operation unbound. If you invoke any unbound operation then, you will see a "Requested Operation is not implemented" error message.

13. Enter the request service name, by which you want to publish your web service, in the **Request Service Name** text box (see Figure 340).

> Skip step 12– 16 and continue from step 17 if you select **Yes** in the **Upload WSDL** drop-down list.
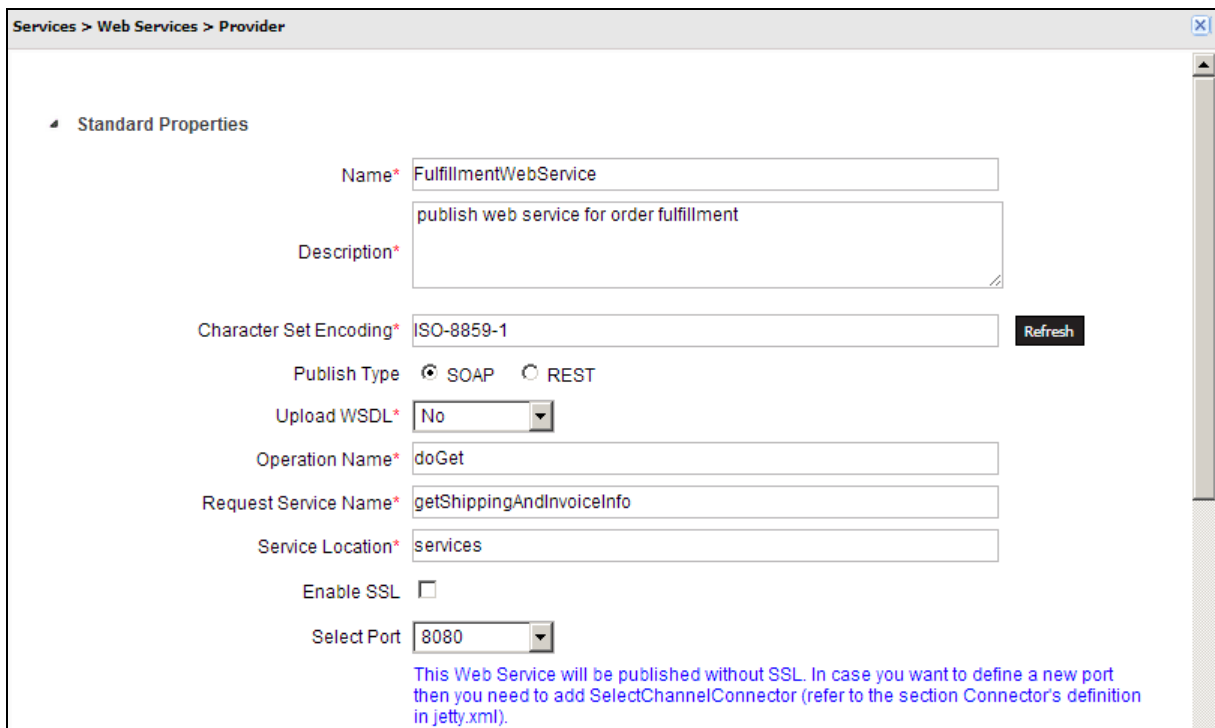
Figure 340: Create Web Service Provider

14. Select the SOAP version from the Soap Version drop-down list.
15. Select the process flow, which you want to publish as web service from the Process Flo**w Name** dropdown list.

> By default, the request service will be in the services/<folder name>. You can change this location and provide a new location for accessing the web service.

> If you want your WS Provider activity to offer a SSL security then check the **Enable SSL** checkbox.

16. Select an input XML schema from the **Input XML Schema** dropdown list. This XML Schema will contain the XML that the Web Service provider activity will input.

17. Select the output XML schema from the **Output XML Schema** dropdown list.

> In case an XML Schema has multiple roots then, click the **Select Root** button and select a root.

18. Enter the input and output variables in the **Input Variable** and **Output Variable** textboxes respectively.

19. Select the security policy activity from the **Security Policy** dropdown list if required (see Figure 341).

Figure 341: Create Web Service Provider

> To know how to create a security policy, please refer to the Creating Security Policy for Web Services section.

20. Click the **Save** button.

> If you want to know the IP address of the clients who are accessing your web service then, you can now do that by accessing the `ClientIP` variable. This variable is a part of the context info of the process flow, which is published by the Web Service Provider. You can use this variable in scenarios such as - When you want to respond to a client's request as per it's IP. You can achieve this by using the IP address of the client that you can easily get from the `ClientIP` variable.

In case you want to update your existing Web Service Provider Activity using EasyWSDL parser then please refer to the <u>Updating Existing Web Service Provider Activity Using EasyWSDL Parser</u> section.

Updating WSDL4j Web Service Provider Activity to Use EasyWSDL Parser

If you want to update your existing WS Provider activity (created using wsdl4j parser) with the new parser (EasyWSDL Parser) then you can do that by following the steps mentioned below:

Steps to Use EasyWSDL Parser for Existing Web Service Provider Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services → Web Services** and then click **Provider**.

3. Click on the existing activity that you want to parse using EasyWSDL parser.

4. Check the Move to New Parser (EasyWSDL) checkbox (see Figure 342).

Figure 342: Move To EasyWSDL Parser

5. Follow the steps of the wizard and then click the **Save** button to save your activity.

The Help link beside the **Move to New Parser (EasyWSDL)** checkbox provides you with some additional information about the parser.

Using Attachments in Web Services

You can use web services to send attachments with your provider or consumer activities. Using Adeptia Suite you can now manipulate these attachments by either storing them on your system or encoding these attachments in either Base64 Binary or Hex Binary encodings.

This chapter covers the following:

- <u>Using MIME</u>
- <u>Using Base64 Binary and Hex Binary Encoding</u>

Using MIME

Multipurpose Internet Mail Extensions (MIME) is an Internet standard that helps extend the capabilities of web services by allowing insertion of images, sounds, and text in a message.

MIME offers the following features to web services are as follows:

- Support for multiple attachments in a single message
- Support for non-ASCII characters
- Support for attachments which may contain executables, audio, images and video files, etc.
- Support for unlimited message length

MIME for Web Services or SOAP with Attachments refers to the method of using Web Services to send and receive files using a combination of SOAP and MIME, primarily over HTTP. Adeptia Suite now supports MIME feature in its web services provider and consumer activities.

Web Service Provider Activity Using MIME

In Adeptia Suite, web service provider activity extracts all the MIME attachments from web service request and send attachments in web service response.

Handling MIME Attachments in Request

When your web service provider activity receives a request that has MIME attachments then, please follow the below steps:

1. While creating a web service provider, you need to check the **Enable Attachment** checkbox (seeFigure 343).

Figure 343: Enable Attachment Property

2. If the request has any MIME attachments, then your web service provider stores them in the system.

> The web service provider stores these attachments at a base location that you can configure by the following steps:
> 1. From the Adeptia Suite home page, click the *Administer* tab.
> 2. On the *Administer* tab, click the **Update System Properties** link.
> 3. On the **Update System Properties** screen, click on **Services → Web Service Configuration**.
> 4. Change the value of the **abpm.webservice.metro.soapattachment.location** property by giving an absolute path. **web/Attachments** is the default value.

3. You can find a list of all the names of the attachments and location of the attachments in the context info of the process flow within these variables:

- **SOAPAttachmentsList** variable contains the names of the attachments
- **SOAPAttachmentsLocation** variable contains the location of the attachments

Sending MIME Attachments in Response

When your web service provider activity is sending response with MIME attachments then, please follow the below steps:

1. Check the **Enable Attachment** checkbox while creating web service provider activity (seeFigure 344).

Figure 344: Enable Attachment Property

2. In the process flow designer, create context variable **MimeAttachmentFolderPath.**
3. Mention an absolute folder path of the attachments in the **MimeAttachmentFolderPath** variable.

> **i** If the location of attachments has both attachments and other folders then, the web service provider would only send the files present in the root folder. It will not recursively scan all the other folders for attachments.

4. The web service provider would then send its response with embedded attachments.

Web Service Consumer Activity Using MIME

In Web Service Consumer activity, send MIME attachments with Web Service request and extract all the attachments in Web Service response.

Sending MIME Attachments in Request

When your web service consumer activity sends a request with MIME attachments then, please follow the below steps:

1. Create a context variable **Service.<*entityName*>.enableAttachment** in the process flow, and set its value to **True/Yes** if you want to send the attachment with your request.

> **i** *entityName* is the name of Web Service consumer activity used in the process flow.
>
> Set the value to **False/No** if you don't want to send attachments with your request.

2. Mention an absolute folder path of the attachments in the **Service.<*entityName*>.mimeAttachmentFolderPath** variable.

> **i** If the location of attachments has both attachments and other folders then, the web service consumer would only send the files present in the root folder. It will not recursively scan all the other folders for attachments.

3. The web service consumer would then send its response with embedded attachments.

Handling MIME Attachments in Response

When your web service consumer activity receives a response with MIME attachments then, please follow the below steps:

6. Create a context variable **Service.<*entityName*>.enableAttachment** in the process flow, and set its value to **True/Yes** if you want to receive the attachment with your response.

> **i** *entityName* is the name of the Web Service consumer activity used in the process flow.
>
> Set the value to **False/No** if you don't want to receive attachments with your response.

7. If the response has any MIME attachments, then your web service consumer stores them in the system.

> **i** The web service consumer stores these attachments at a base location that you can configure by the following steps:
> 1. From the Adeptia Suite home page, click the *Administer* tab.
> 2. On the *Administer* tab, click the **Update System Properties** link.
> 3. On the **Update System Properties** screen, click on **Services → Web Service Configuration**.
> 4. Change the value of the **abpm.webservice.metro.soapattachment.location** property by giving an absolute path. **web/Attachments** is the default value.

8. You can find a list of all the names of the attachments and location of the attachments in the context info of the process flow within these variables:
   - **ConsumerSOAPAttachmentsList** variable contains the names of the attachments
   - **ConsumerSOAPAttachmentsLocation** variable contains the location of the attachments

Using Base64 Binary and Hex Binary Encoding

Base64 is a mechanism to enable representing and transferring binary data over mediums that allow only printable characters. The need for Base64 arose from the need to attach binary content to web services like images, videos or arbitrary binary content.

HexBinary is a built-in data type that represents binary data encoded in hexadecimal format.

Adeptia Suite now supports Base64 Binary or Hex Binary encoding in its web services provider and consumer activities.
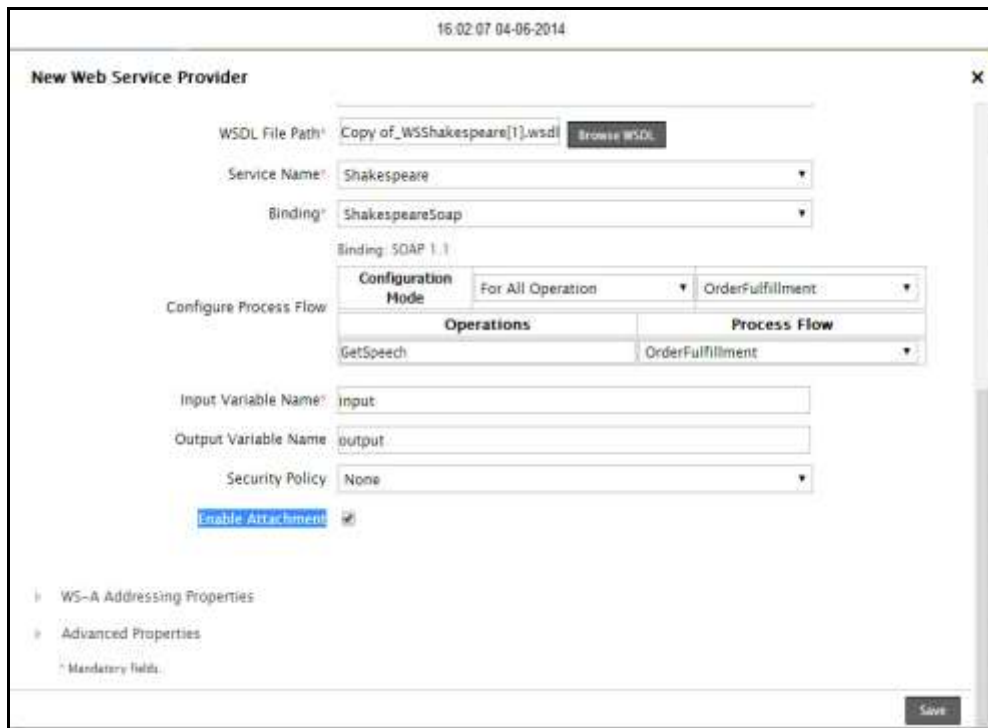
Web Service Provider Activity Using Base64 Binary and Hex Binary

In Web Service Provider activity, extract all the Base64 Binary or Hex Binary attachments from Web Service request and send attachments in Web Service response.

Handling Base64 and Hex Binary Attachments in Request

When your web service provider activity receives a request that contains Base 64 and Hex Binary attachments then, please follow the below steps:

1. While creating a web service provider, you need to check the **Enable Attachment** checkbox (see Figure 345).

Figure 345: Enable Attachment Property

2. If the request has any Base64 Binary or Hex Binary attachments, then your web service provider stores them in the system and within the request it replaces the attachments with a **cid:*uniqueid*** unique ID.

> ℹ️ The web service provider stores these attachments at a base location that you can configure by the following steps:
> 1. From the Adeptia Suite home page, click the *Administer* tab.
> 2. On the *Administer* tab, click the **Update System Properties** link.
> 3. On the **Update System Properties** screen, click on **Services → Web Service Configuration**.
> 4. Change the value of the **abpm.webservice.metro.soapattachment.location** property by giving an absolute path. **web/Attachments** is the default value.

3. You can find a list of all the names of the attachments and location of the attachments in the context info of the process flow within these variables:

- **SOAPAttachmentsList** variable contains the names of the attachments
- **SOAPAttachmentsLocation** variable contains the location of the attachments

> **i** The binary data that you extract from a request is encoded only if, your client has not enabled the **MTOM**. Otherwise, the extracted data is not encoded.

Sending Base64 and Hex Binary Attachments in Response

When your web service provider activity is sending response that has Base64 and Hex Binary attachments then, please follow the below steps:

1. Check the **Enable Attachment** checkbox while creating web service provider activity (seeFigure 346).
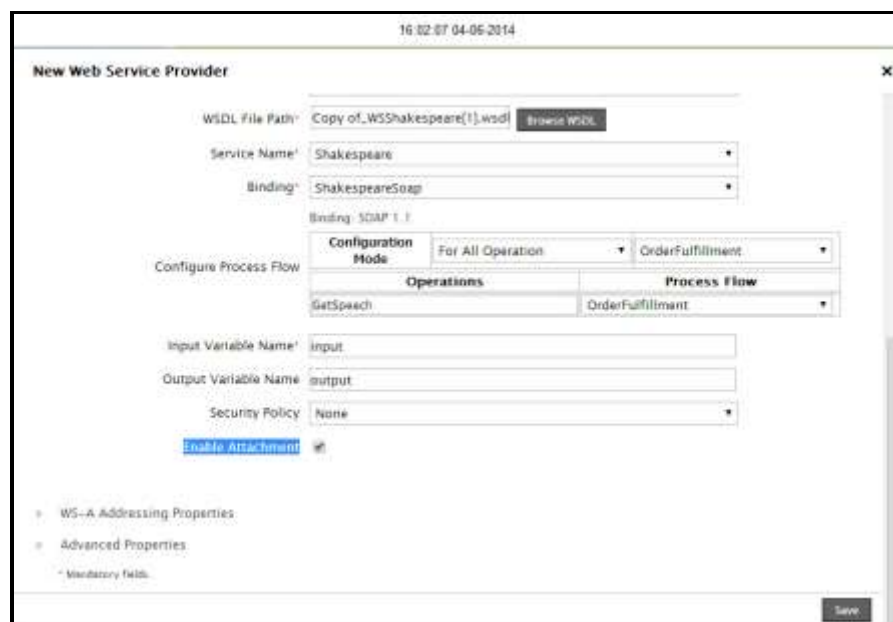
Figure 346: Enable Attachment Property

2. In the process flow designer, create context variable **BinaryAttachmentFolderPath.**
3. Mention an absolute folder path of the attachments in the **BinaryAttachmentFolderPath** variable.

> **i** If the location of attachments has both attachments and other folders then, the web service provider would send only files in the root folder. It will not recursively scan all the other folders for attachments.
> Moreover the web service provider would attach files in the response by matching *uniqueids* with itself.

4. Map the data to send a Base64 binary or Hex binary attachment with your response. Do the textual mapping by matching the Base64 or Hex binary element with **cid:filename**. Use this mapping activity in the Process Flow.

5. The web service provider would then send its response with embedded attachments.

Web Service Consumer Activity Using Base64 Binary and Hex Binary

In Web Service Consumer activity, send Base64 Binary or Hex Binary attachments with Web Service request and extract all the attachments in Web Service response.

Sending Base 64 and Hex Binary Attachments in Request

When your web service consumer activity is sending a request that has Base64 Binary and Hex Binary attachments then, please follow the below steps:

1. Create a **Service.<*entityName*>.enableAttachment** variable in the process designer of the process flow and set its value to **True/Yes** to send the attachment with your request.

> *entityName* is the name of the Web Service Consumer activity used in the process flow.
>
> Set the value to **False/No** if you don't want to send attachments with your request.

2. Mention an absolute folder path of the attachments in the **Service.<*entityName*>.binaryAttachmentFolderPath** variable.

> If the location of attachments has both attachments and other folders then, the web service consumer would send only files in the root folder. It will not recursively scan all the other folders for attachments.

3. The web service consumer would then send its request with embedded attachments.

Handling Base 64 and Hex Binary Attachments in Response

When your web service consumer activity receives a response that has Base64 Binary and Hex Binary attachments then, please follow the below steps:

1. Create a **Service.<*entityName*>.enableAttachment** variable in the process designer of the process flow and set its value to **True/Yes** to receive the attachment with your response.

> *entityName* is the name of the Web Service Consumer activity used in the process flow.
>
> Set the value to **False/No** if you don't want to receive the attachments with your response.

2. If the response has any Base64 Binary or Hex Binary attachments, then your web service consumer stores them in the system and within the response it replaces the attachments with a **cid:*uniqueid*** unique ID.

> The web service consumer stores these attachments at a base location that you can configure by the following steps:
> 1. From the Adeptia Suite home page, click the *Administer* tab.
> 2. On the *Administer* tab, click the **Update System Properties** link.
> 3. On the **Update System Properties** screen, click on **Services → Web Service Configuration**.
> 4. Change the value of the **abpm.webservice.metro.soapattachment.location** property by

giving an absolute path. **web/Attachments** is the default value.

- You can find a list of all the names of the attachments and location of the attachments in the context info of the process flow within these variables:
  - **ConsumerSOAPAttachmentsList** variable contains the names of the attachments
  - **ConsumerSOAPAttachmentsLocation** variable contains the location of the attachments

MTOM (Message Transmission Optimization Mechanism) is a standard way for transmitting binary data, such as images, PDF files, and MS Word documents that uses SOAP protocol. The MTOM message format allows bit stream compression of binary data. This results in less transmission time as a large chunk of binary data takes up less space than its encoded representation.

The Adeptia Suite enables you to use MTOM properties for Web Service Consumer activity to achieve the transmission of binary data through SOAP messages. For better performance you can Check the **Enable MTOM** checkbox to use the MTOM format in your Web Service Consumer Activity(see Figure 347).

Figure 347: Enable MTOM Property

The binary data that you extract from a response is encoded only if you have not enabled the MTOM checkbox while creating consumer.

However, if you have enabled the MTOM checkbox and the Web Service that you are trying to hit, also supports and has MTOM enabled at its end, the data that you extract will not be encoded.

Using 2 Way SSL in Web Service Communication

Mutual authentication, or **two-way authentication**, or 2WAY authentication, refers to both server and client authenticating each other in such a way that both are assured of each others' identity.

In a two-way SSL, digital certificates represent the identities of the client and server. The two parties establish the trust upon each other by getting the certificates signed by a mutually trusted certificate authority. The process of exchanging certificates and setting up connection properties is called as the Secure Sockets Layer (SSL) handshake.

The Adeptia Suite supports 2 way SSL, when you are accessing or publishing any web service. You can configure the 2 Way SSL on each activity level.

Configure 2 way SSL at Service Level in WS Consumer

When you want to access a SSL-enabled web service using Web Service Consumer activity, then you have to perform the following tasks:

- Create a Keystore and import your certificate into it.

> To know how to create a Keystore and import certificates into it, please refer to the Creating Keystore section.

.

- Import the certificate of the Server, which you want to authenticate, within Adeptia Truststore.

> To know how to create a Trust store and import certificate into it, please refer to the Creating Keystore section.

.

- Create a Security policy and select the Keystore and the Trust store within SSL Properties.

> To know how to create a security policy, please refer to the Creating Security Policy Activity for Web Services section.

- Use this security policy within the Web Service Consumer activity.

> To know how to create a Web Service Consumer activity, please refer to the Creating Web Service Consumer Activity section.

Configure 2 way SSL at Service Level in WS Provider

- When you want to publish a SSL-enabled Web Service using Web Service Provider activity, then you have to perform the following tasks: Create a Keystore.

> To know how to create a Keystore, please refer to the Creating Keystore section.

- Import the certificate of the clients, which you want to authenticate, within Adeptia Truststore.

> To know how to create a Trust store and import certificate into it, please refer to the Creating Keystore section.

- Add a connector *SSLSelectChannelSelector* for jetty.

> To know how to add SSLSelectChannelSelector, please refer to the Adding SSLSelectChannelSelector for jetty section.

- Now to publish the Web Service through SSL, create a Web Service Provider activity. While creating Web Service provider activity, check the **Enable SSL** checkbox and select the Port which you have defined in the **SslSelectChannelConnector** (see Figure 348).

Figure 348: Create Web Service Provider with SSL Enabled

Creating Security Policy Activity for Web Services

Since web services expose crucial business information online, hence their security is critical for the business. You can secure a web service by using Security Policy activity. We recommend you to create an appropriate security policy before you publish your web service using the Web Service Provider activity.

This feature is available in:

Enterprise	Premier	Professionalal	Express
✓	✓	✓	

Steps to create a Security Policy Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** ➔ **Web Services** and then click **Security Policy**.

    This action will show you the *Manage Security Policy* screen (see Figure 349).

Figure 349: Manage Security Policy

3. Click the **Create New** link. This action will show you the **New Security Policy** screen (see Figure 350).

Figure 350: New Security Policy

4. Enter the name and description of the new Security Policy in the **Name** and **Description** textboxes respectively.

5. Select the type of security policy, that you want to use, from the **Security Policy Type** radio button.

> **i** When you check the *WS Consumer* radio button, you will see a new category *SSL Properties* on the *New Security Policy* screen (see Figure 351).

Figure 351: SSL Properties

6. To use basic authentication in your security policy activity, expand the **Basic Authentication Properties** area and follow the steps below**:**

- Select the **Basic Authentication** checkbox.

- Enter the user ID and password in the **User ID** and **Password** textboxes respectively. Enter again the password in the **Confirm Password** textbox (see Figure 352).

> **i** In case you select a **Security Policy** with basic authentication, while creating Web Service Consumer activity, only then you will see an additional **Authenticate Preemptively** checkbox. Check the **Authenticate Preemptively** checkbox if you want to send the credentials to a server without any request from it. Do not check the **Authenticate Preemptively** checkbox if you want to send the credentials upon a server request.

> **i** You can override the **UserID** and **Password** field defined in security policy activity for authentication. To override you need to define following variables in the process flow context:
> - Service.entityName.userID
> - Service.entityName.password

Here, *entityName* is security policy activity name which is used in the web service consumer activity of SOAP type.

Figure 352: Basic Authentication

- To use SSL in your security policy activity, expand the **SSL Properties** area and follow the steps below:

This option is available only with Web service consumer activity.

- Check the **SSL** checkbox.
- Select the Truststore activity in which you have imported the certificate of the Server.
- Select the Keystore activity that contains your certificate.

To know how to create a Truststore/Keystore, please refer to the Creating Keystore And Truststore section.

- Select the Alias Name of the Keystore which you want to pass to the server for authentication.

> **i** If you do not select a truststore, then the security policy uses the truststore defined at global level within SSL Configuration.
>
> Similarly, if you do not select the Keystore then the security policy uses the Keystore defined at the global level within SSL Configuration.
>
> To view the global Level SSL Configuration properties, click the Administer tab, go to Setup →
> Application Settings → Update System Properties → Services → SSL Configuration.

7. To define message level security (WS-Security) for outgoing message, expand the **Outgoing Message Properties** area and follow the steps below: (see Figure 353).

New Security Policy

◢ **Outgoing Message Properties**

Signature ☑

Keystore [Adeptia_Keystore ▾]

Alias [adeptiabpmtemp ▾]

Include Time Stamp ☑

Key Identifier Type [Binary Security Token ▾]

Signature Algorithm [http://www.w3.org/2001/04/xmldsig-more#rsa-sha256 ▾]

Signature Canonicalization [http://www.w3.org/TR/2001/REC-xml-c14n-20010315#WithC ▾]

#	Name	Namespace	Encode
1			Content ▾
2			Content ▾
3			Content ▾
4			Content ▾

Parts

Remove Position [0] [Add Row] [Remove Row]

Encryption ☑

Keystore [Adeptia_Keystore ▾]

Alias [adeptiabpmtemp ▾]

Key Identifier Type [Binary Security Token ▾]

Symmetric Encoding Algorithm [http://www.w3.org/2001/04/xmlenc#aes128-cbc ▾]

Key Encryption Algorithm [http://www.w3.org/2001/04/xmlenc#rsa-oaep-mgf1p ▾]

#	Name	Namespace	Encode
1			Content ▾
2			Content ▾
3			Content ▾
4			Content ▾

Parts

Remove Position [0] [Add Row] [Remove Row]

User Name Token ☑

UserName* [Adeptia]

Password [•••••••]

Confirm Password* [•••••••]

Token Nonce ☑ Adds a nonce

Add Created ☑ Adds a created

Password Type* [PasswordText ▾]

Time Stamp ☑

Time To Live [60] Seconds

Other Configuration

Message Outgoing Sequence [T,U,S,E]

▷ **Incoming Message Properties**
▷ **Advanced Properties**

* Mandatory fields.

[Save]

Figure 353: Define Message Level Security for Outgoing Message

8.   You can use one or more following options:

- **Signature:**

Signs outgoing message content. To configure signature, check the **Signature** checkbox. Specify which Keystore to use from the **KeyStore** dropdown list and define the following property in the respective fields.

> To know how to create a Keystore, please refer to the [Creating Keystore](#) section.

- o **Alias** (This should be same as in the *Alias* field in the Keystore)
- o **Include Time Stamp**
- o **Key Identifier Type** (You can use *Binary Security Token*, *Issuer Name Serial Number*, *Subject Key Identifier*, or *X509 Certificate*)
  - ▪ **Signature Algorithm** (This should be same as in the *Key Algorithm* field in the Keystore)
  - ▪ **Signature Canonicalization**
- o Define the parts that you want to sign in the **Parts** table. Enter the name and its namespace in the **Name** and **Namespace** fields respectively. The Parts table allows you to selectively sign only subsets of the message content by specifying the name or namespace of the element (if left empty the Security Policy will sign the entire message).
- o Select whether you want to sign the *Content* or *Element* from the **Encode** dropdown list.

> In case you do not define any part then the Security Policy will sign the whole message.

- **Encryption:**

Select the Encryption checkbox to encrypt outgoing message content. Specify which Keystore to use along with the alias/password.

> While using encryption, select the keystore with *RSA* key algorithm only.
> To know how to create a Keystore, please refer to the [Creating Keystore](#) section.

- o Enter the following property in the respective fields.
  - ▪ **Alias** (This should be same as in **Alias** field in the Keystore)
  - ▪ **Key Identifier Type** (You can use *Binary Security Token*, *Issuer Name Serial Number*, *Subject Key Identifier*, or *X509 Certificate*)
  - ▪ **Symmetric Encoding Algorithm**
  - ▪ **Key Encryption Algorithm**
- o Define the parts that you want to encrypt, in the **Parts** table. Enter the name and its namespace in the **Name** and **Namespace** fields respectively.
- o Select whether you want to encrypt the Content or the Element from the **Encode** dropdown list.

- **User Name Token:**

Adds a Username Password token to the outgoing message, specify the username and password to use and if you want to add nonce to it. The **Password Type** dropdown list gives you certain options to serialize your password in the message.

- o To add user name token, check the **User Name Token** checkbox and define the following properties:
    - User Name
    - Password
    - Confirm Password
    - Token Nonce
    - Add Created
    - Password Type

- **Time Stamp:**

Adds a Timestamp token to the outgoing message with the specified Time To Live value.

- o To add time stamp with the message check the Time Stamp checkbox and enter the time (in seconds) in Time To Live textbox.

9. To define message level security (WS-Security) for incoming message, expand the **Incoming Message Properties** area and select the **Incoming Message** checkbox (see Figure 354).

Figure 354: Define Message Level Security for Incoming Message

10. You can use one or more following options:

- **Signature:**

  To configure signature, check the **Signature** checkbox.

  o Select a Keystore from the **Signature KeyStore** dropdown.

o Check the **Include Time Stamp** checkbox if required.

o Define the parts that you want to sign, in the **Parts** table. Enter the name and its namespace in the **Name** and **Namespace** fields respectively.

o Select whether you want to sign the *Content* or *Element* from the **Encode** dropdown list.

In case you do not define any part then the Security Policy will sign the whole message.

- **Encryption:**

To configure Encription, check the **Encription** checkbox. Specify which Decryption Keystore to use.

While using encryption, select the keystore with *RSA* key algorithm only.

o Define the parts that you want to encrypt, in the **Parts** table. Enter the name and its namespace in the **Name** and **Namespace** fields respectively.

o Select whether you want to encrypt the Content or the Element from the **Encode** dropdown list.

- **User Name Token:**

To configure User Name Token, check the **User Name Token** checkbox.

o Specify the username and password to use.

o Confirm your password.

o Check the **Token Nonce Required** checkbox if you want to add nonce to it.

o Select a Password Type from the dropdown list.

- **Time Stamp:**

To add time stamp with the message check the Time Stamp checkbox and enter the time (in seconds) in Time To Live textbox.

To learn about Advanced Properties refer to Changing Advanced Properties section.

11. Click the **Save** button.

If you check the **Incoming Message** checkbox without specifying **Signature Required** and **Encryption Required** properties, the system uses **SSL Configuration** properties (which is defined in Update System Properties section) by default.

Adding *SSLSelectChannelSelector* for jetty

This section explains how to add SSL SelectChannelSelector in Adeptia Jetty.

Steps to add SSLSelectChannelSelector in jetty

1. Go to */ServerKernel/etc/jetty* folder and open the *Jetty.xml* file.

   Add an sslContextFactory within **sslContextFactory definition** section as shown below.

   ```
   <!-- sslContextFactory definition

        *To add SslContextFactory( which is used in SslSelectChannelConnector definition)

        * modify id of SslContextFactory as it should be different from already defined sslContextFactory.

        * modify KeyStore properties as per the requirement.

   <New id="sslContextFactory2" class="org.eclipse.jetty.http.ssl.SslContextFactory">

     <Set name="KeyStore"><Property name="jetty.home" default="." />/etc/jetty/custom.keystore</Set>

     <Set name="KeyStorePassword">password</Set>

     <Set name="KeyManagerPassword">password</Set>

     <Set name="TrustStore"><Property name="jetty.home" default="." />/etc/jetty/custom1.keystore</Set>

     <Set name="TrustStorePassword">password</Set>

   </New>
   ```

2. Define the following details within the new sslContextFactory, which you have defined:

   a. Path and Name of the keystore file.

   b. Keystore password

   c. Key Manager password

   d. Path and Name of the truststore.

   e. Truststore password

3. Now add the **SslSelectChannelConnector** within **Connector's definition** as shown below.

   ```
   <!-- Connector's definition


   To add SslSelectChannelConnector modify below items:
     * modify id as per the declared sslContextFactory(user has to define new sslContextFactory if new keystore
   for this connector is required)
      Declaration (refer to the section sslContextFactory definition).
     * modify connector name from HttpsConnectorB to the required name.
     * modify Port value as per the requirement

   <Item>
    <New class="org.eclipse.jetty.server.ssl.SslSelectChannelConnector">
     <Arg><Ref id="sslContextFactory2" /></Arg>
   ```

```
        <Set name="name">HttpsConnectorB</Set>
        <Set name="Port">7443</Set>
        <Set name="maxIdleTime">30000</Set>
<!—- If you will set NeedClientAuth property to true it means you have enabled the client authentication for this
connector i.e. client will be authenticated for the each request and if you set it to false then it means client will
not be authenticated at server side. -->
        <Set name="NeedClientAuth">true</Set>
        <Set name="Acceptors">2</Set>
        <Set name="AcceptQueueSize">100</Set>
    </New>
    </Item>
```

4. Enter the following details within the new **SslSelectChannelConnector,** which you have added.

    a. Define the name of the **sslContextFactory**, which you have added.

    b. Enter the name of **SslSelectChannelConnector**.

    c. Enter the port at which you want to publish the Web Service.

    d. If you want to authenticate the client, set the value of **NeedClientAuth** attribute to **true**.

    > If you want to publish more than one Web Service each on different ports, then you have to define **SslSelectChannelConnector** for each port.

5. Save the file and restart the kernel and WebRunner.

USING RESTFUL WEB SERVICE

Representational State Transfer (RESTful) has gained widespread acceptance across the Web as a simpler alternative to SOAP- and Web Services Description Language (WSDL)-based Web services. RESTful web service uses architectures that use HTTP or similar protocols by restricting the interface to use standard operations like GET, POST, PUT, DELETE for HTTP. You can create Consumer/Provider activities with the RESTful Web Service using Adeptia Suit.

Creating Web Service Consumer Activity to Access RESTful Web Service

This section explains the process of creating web service consumer activity for RESTful Web Service.

Steps to create Web Service Consumer activity for RESTful Web Service

1. On the create **Web Service Consumer** page, select the **REST** radio button (see Figure 355).

Figure 355: Create RESTful Web Service Consumer

2. Click **Next**. The values that you gave in the previous screen will automatically populate the **Name** and **Description** fields here.

3. The **Character Set Encoding** field will display you the default character set encoding, you can define this at the application level. You can also change the character set encoding as per your requirements.

4. In the **URL** textbox, enter the URL of the Web Service that you want to invoke.

> You need to pass the request in the URL.
>
> You can also define the values of the parameters in the *Parameter table*.

5. To populate the **Parameter** table automatically from a URL, click the **Extract Param from URL** button. You can also populate the **Parameter** table along with their default values by giving the query parameters in the URL itself (see Figure 356).

> You can dynamically override a complete URL or any parameter of the URL with the value of any variable. To do this you need define the variable name in the URL field.
>
> For Example, To override a complete URL you can define the URL as $$REST_URL_Var$$.

Figure 356: Define Parameters

6. Select the style of the parameters from the **Style** drop-down list. It could be *Query* or *Header*.

> ℹ️ If you want to pass parameters as a part of HTTP request then, you need to select *Header* in the **Style** drop-down list.

7. Select a method from the **Method** field. You can select any of the following methods:

    -   Get

    -   Put

    -   Post

    -   Delete

8. Define the **Type** and **Media Type** from the **Presentation** table as per you requirement.

9. Select a security policy from the **Security Policy** drop-down list.

> ℹ
> - To know how to create Security policy, please refer to the *Creating Security Policy for Web Service* section.
> - RESTful Web Service Consumer, only supports basic authentication.

> ℹ
> When you use either *Put* or *Post* method, then following two additional options are displayed.
> - Post Query String
> - Enable Multipart
>
> Post query string is used to pass the query paramters in RESTful Request. To send the query parameters with Put or Post method, enable the Post Query String option and define the parameters in the *Parameter* table.
>
> Enable Multipart is used to the post the file to the RESTful Webservice. To send a file follow the below steps:
> - Enable the *Enable Multipart* option.
> - In the *Part Name field* enter the name of the form-data field.
> - Enter the name of the file in the *File Name* field. This name will be used for the file, which will be posted to the Web Service. You have to pass the file, which you want to send through this consumer, as a source stream. You use file source activity to achieve it.
> - Modify the media type in the presentation table as explained below
>   - Media type for *Request* should be *multipart/form-data*
>   - Media type for *Response* varies for different web service. It can be application/json or application/xml.

10. Expand the **Advanced Properties** section to view the advance property of the RESTful web service consumer activity (see Figure 357).

Figure 357: Advanced Properties (RESTful Web Service Consumer Activity)

11. If you do not want your RESTful web service consumer activity to wait indefinitely for a response from a web service provider then, enter a timeout value in the **Read Timeout (in seconds)** text box. The default value is **0** which means your RESTful web service consumer activity will wait indefinitely for a response.

12. If you want to enter a time within which your RESTful web service consumer activity should connect to a web service then, enter a timeout value in the **Connect Timeout (in seconds)** text box. The default value is **0** which means your RESTful web service consumer activity will wait indefinitely for a connection.

13. Click the **Save** button.

Overriding RESTful URL

We can override the REST URL at run time by placing Put-Context-Var before Web Services REST Consumer Activity in the Process Flow.

Steps to override the REST URL:

1. On the Adeptia Suite homepage, go to **Develop > Services > Web Services > Consumer**.

2. Create a RESTful Consumer activity by using a dummy URL in the **URL** field (see Figure 358).

> To know how to create RESTful Consumer, please refer to the *Creating Web Service Consumer Activity to Access RESTful Web Service* section.

Figure 358: Create RESTful Web Service Consumer

3. Click **Save**.
4. Create a Target Activity.

> ℹ️ To know how to create a Target Activity, please refer to the Creating Target Activity section.

5. On the Adeptia Suite homepage, go to **Develop > Process > Process Flow**.

6. Create a process flow using the following activities in sequence (see Figure 359):

Server Entities	Description
Context Variable	Put-Context-Var
Consumer Activity	REST
Target Activity	Any
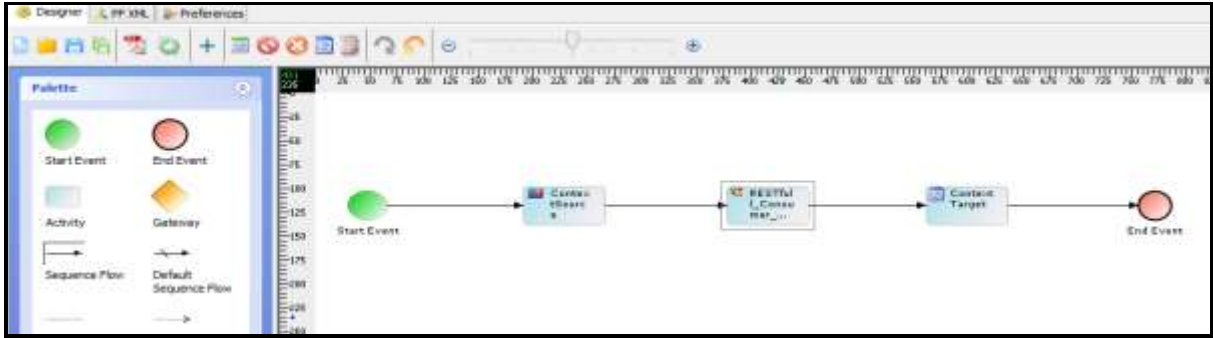
Figure 359: Create Process Flow

13. Click hierarchy structure in the **Repository View** panel. Expand the **Action** list and select the **put-context-var** action to drag it to the Graph Canvas area before the REST Consumer Activity.

14. Connect the *put-context-var* to the REST Consumer Activity.

15. Right-click the **put-context-var** and select **View Properties**. Its properties are displayed in the Properties Panel in the Bottom Pane.

16. Click the **Edit** button to edit the value of context variable. The **Edit Context Variables** dialog box is displayed (see Figure 360).
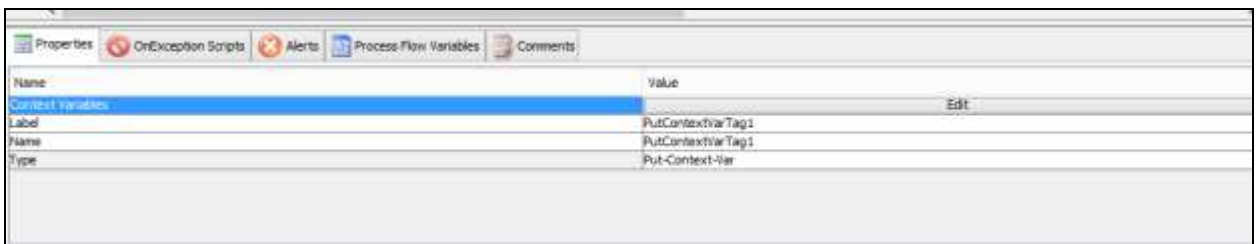
Figure 360: Edit Context Variables

17. Click the **Add Variable** ( ) to add new context variable. The **Context Variable Information** screen is displayed.

18. Select the Rest Consumer activity (which is to be overridden) from the dropdown list *Activity Name*. All variables of this Rest Consumer activity are listed in the dropdown list **Variable Name** (seeFigure 361).
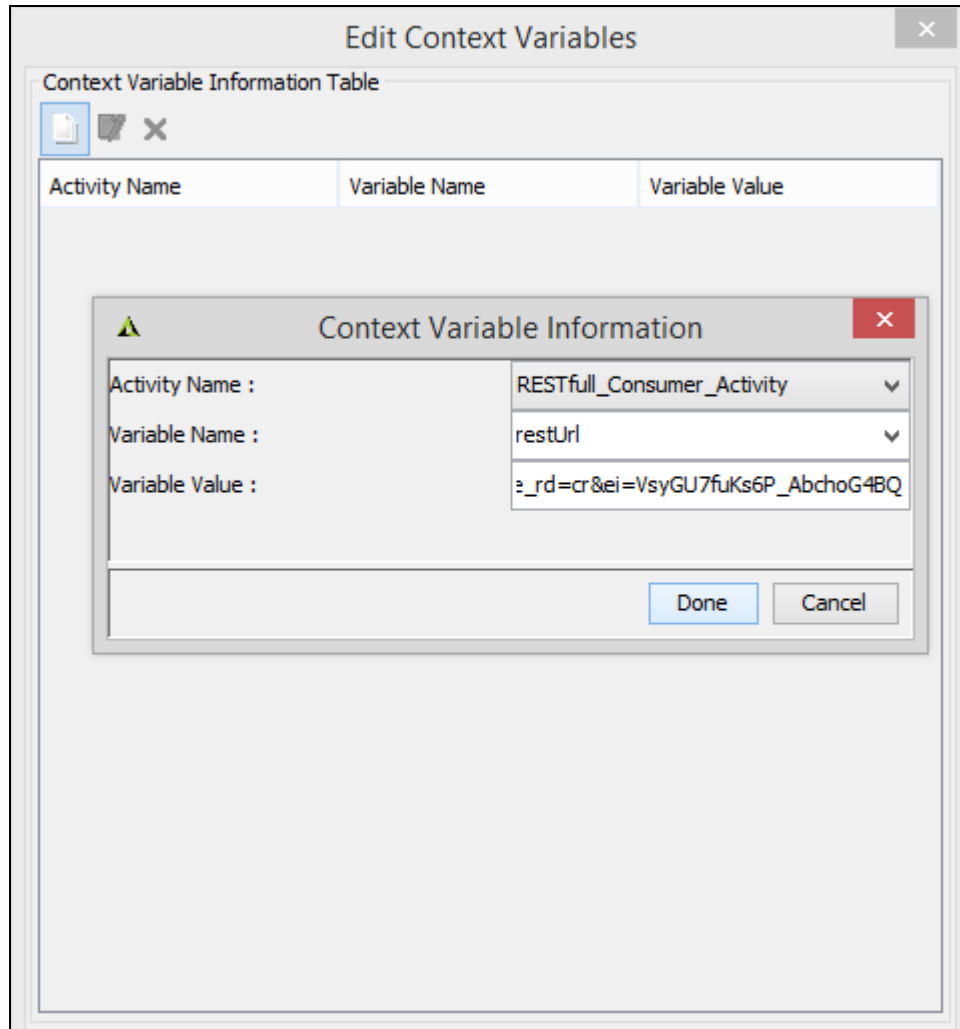
Figure 361: Context Variable Information

19. Select restURL variable from the dropdown list **Variable Name**.

20. Enter the Url that you want to override during the run time, in the textbox **Variable Value**.

21. Click **Done** to close the *Context Variable Information* screen. This takes the control back to the screen **Edit Context Variables**. The newly created variable is added to the list of existing context variables.

22. Click **Done** to close the **Edit Context Variables** screen and return to Process Designer.

23. Select your Target activity.

24. **Save** the process flow and exit from Process Designer.

25. Execute the process flow, this overrides the dummy URL provided at the design time.

> There are two ways to override RESTful URL at the run time:
>
> o   Provide the whole RESTful URL in the Variable value text box. For e.g.:
>   http://developer.yahooapis.com/TimeService/V1gettime?appid=YahooDemo
>
> o   Provide some parts of RESTful URL in the Variable value text box. For e.g.:
>   http://developer.yahooapis.com/$$Var1$$/V1/gettime?$$Param$$=$$Value$$
>
> Where values of Context Variables **Var1**, **Param**, and **Value** are defined as **TimeService**, **appid** and **YahooDemo** in the Process Flow Designer respectively.

Create Web Service Provider Activity to publish RESTful Web Service

This section explains the process of creating web service provider activity for RESTful Web Service.

Steps to Use Web Service Provider Activity to Publish RESTful Web Service

1. In **Create Web Service Provider Screen**, enter the name and description of the new Web Service Provider activity in the **Name** and **Description** textboxes respectively (see Figure 362).

   In case the Web Services Provider activity contains characters which falls in character set encoding, other than the default character set encoding, then you can change this encoding in the **Character Set Encoding** textbox. By default, this textbox will display you the character set encoding that you have defined at the application level.

Figure 362: Create RESTful Web Service Provider

2. Select the **REST** radio button for the **Publish Type** field.

3. Enter the resource end path URL in the **Resource End Path** textbox. For example: */rest/WeatherForecast*

4. From the **Process Flow Name** drop-down list, select the process flow name that you want to trigger with this web service.

> 1. The process flow, which you select here, should have Context Source and Context Target activity.
>
> 2. The parameterName attribute of the context source should be *restRequest.*
>
> 3. The parameterName attribute of the context target should be *restResponse.*

5. To define the resource parameter, enter the name and default value of the parameter in the **Name** and **Default Value** textboxes respectively.

6. Select the style of the parameter from the **Style** drop-down list.

For the parameters that you want to pass as a part of HTTP header, select the *Header* option in the **Style** drop-down list.

7. To add methods to your activity, click on the **Add Method** button. This action will show you the **Method Description** screen (see Figure 363).

Figure 363: Define Method

8. Select the type of method from the **Method Type** drop-down list. The method type can be PUT, GET, POST, or DELETE. As per the type of method that you select, you will see a corresponding content in the Presentation Table (see Figure 364).

Figure 364: Add Method

9. To define the method parameter, enter the name and default value of the parameter in the **Name** and **Default Value** textboxes respectively.

10. Select the style of the parameter from the **Style** drop-down list.

> ℹ️ For the parameters that you want to pass as a part of HTTP header, select the *Header* option in the **Style** drop-down list.

11. Set the **Status Code** and **Media Type** in the **Presentation** table as per the requirements.

12. Select the security policy from the *Security Policy* drop-down list.

> ℹ️ To know how to create Security policy, refer to the Creating Security Policy for Web Service section.
>
> The RESTful Web Service Provider supports only basic authentication.

13. Click the **Save** button.

> ℹ️ A lot of WSDL files by default come with a dummy endpoint that do not point to the actual location of the service, but instead contains a dummy link, for example - http://example/servicename. This is because sometimes the WSDL file describes what the service looks like, but do not point where it is located. Therefore it should be possible to override the endpoint from within the Web Service Consumer configuration instead of having to do via the Process Designer.

CREATING KEYSTORE AND TRUSTSTORE

Earlier in the Adeptia Suite, you could not create any separate Truststores. Now you can create separate Keystores and Truststores. A keystore is collection of certificates and private keys. You can use a keystore with your security policies and web service consumer activities. Keystore stores your certificates and private keys that you can give to your client. Whereas, a Truststore stores all your trusted parties' certificates. Adeptia Suite also allows backward compatibility to support all you previously created keystores. However, the Adeptia Suite will treat all of your previous truststores as keystores.

You can create a keystore either manually or by uploading a keystore file. If you want to manually create a keystore then, you need to provide information for many fields. You can find the description about these fields in the table below.

Table 1: Description of Keystore Fields

Keystore Fields	Description
KeyStore Password	Enter a password of your keystore that you want to set
Confirm Password	Confirm the password of your keystore
Private Key Password	Enter a password of your private key that you want to set
Confirm Password	Confirm the password of your private key
Alias	Enter a name for the identity of the keystore that you are creating
Key Algorithm	Select an algorithm to encrypt your keystore. You can choose from either DSA or RSA
Key Size	Specify the encryption key size of the encryption algorithm. The minimum size for DSA is 512 and for RSA is 1024 but we recommend you to use an algorithm of at least 1024 and 2048 key size respectively.
Common Name	Enter a name that you want to associate with the generated certificate, like a name of a person, e.g. "Susan Jones".
Organization Unit	Name of the organization unit where you work
Organization Name	Name of your organization

Keystore Fields	Description
Locality	Locality of your organization
State	State where your organization is situated
Country	Country where your organization is located
Validity	Enter the number of days for which your keystore will be valid.
Signature Algorithm	Select an algorithm to encrypt your signature. You can choose from SHA1 with DSA, SHA1 with RSA, MD5 with RSA, and RIPEMD160 with RSA.

Steps to create a Keystore

1. Click the **Develop** tab and then click **Services → Security → Keystore/Truststore**. This action will show you the *Manage Keystore/Truststore* screen (see Figure 365).

Figure 365: Manage Keystore/Truststore

2. Click the **Create New** link. This action will show you the *Create New Keystore/Truststore* screen (see Figure 366).

Figure 366: Create New Keystore/Truststore Screen

3. To create a new keystore enter the name and description of the keystore activity in the **Name** and **Description** textboxes respectively.

4. In the **Create** field, select the **KeyStore** radio button.

5. In the **Creation Mode** field, select the **Upload** radio button if you want to create a keystore by uploading a keystore file. Or select the **Manual** radio button if you want to manually configure a keystore.

> If you select the **Upload** radio button then, follow step 6.
>
> Alternatively if you select the **Manual** radio button then, follow 7 - 10 steps.

6. In the **Upload KeyStore** field, select the **Browse** button. In the **Choose File to Upload** dialog box, navigate to your PKCS12 or JKS keystore file type and select the **Open** button to upload your keystore file.

If you select a keystore file with no extension then, from the **Keystore Type** dropdown list select the type of keystore (see Figure 367).

Figure 367: Keystore Type Dropdown List

7. Enter the keystore password in **KeyStore Password** and **Confirm Password** text boxes.

8. Enter the private key password in **Private Key Password** and **Confirm Password** text boxes.

9. Enter the values in all the fields as per your requirement and click **Save**. This action will create a keystore and the private public key pair inside the keystore (see Figure 368).

Figure 368: Manually Configure A Keystore

10. Click the **Save** button to save the keystore.

> ℹ The Adeptia Suite does not support keystore with multiple key entries.

Steps to create a Truststore

1. Click the **Develop** tab and then click **Services → Security → Keystore/Truststore**. This action will show you the *Manage Keystore/Truststore* screen (see Figure 369).
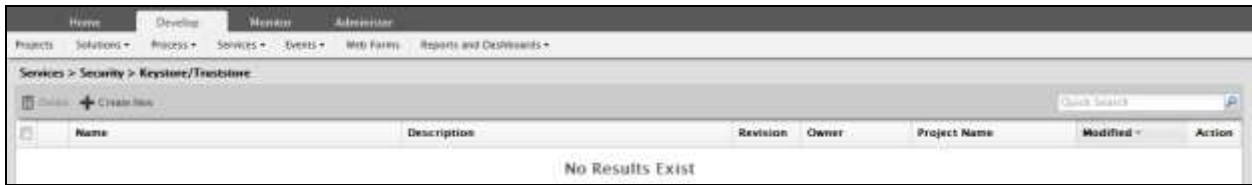
Figure 369: Manage Keystore/Truststore

2. Click the **Create New** link. This action will show you the *Create New Keystore/Truststore* screen (see Figure 370).

Figure 370: Create New Keystore/Truststore Screen

3. To create a new truststore select the enter the name and description of the keystore activity in the **Name** and **Description** textboxes respectively.

4. In the **Create** field, select the **TrustStore** radio button.

5. In the **Upload TrustStore** field, select the **Browse** button. In the **Choose File to Upload** dialog box, navigate to your JKS truststore file type and select the **Open** button to upload your truststore file.

> Truststore only supports JKS file type.

6. Enter the password to access a truststore in the **TrustStore Password** textbox.

7. Enter the confirmation password in the **Confirm Password** textbox.

> When you upload a single certificate and enter a password for it then we are creating a truststore.
>
> You can create a truststore with a single certificate.

8. Click the **Save** button to save the truststore.

EXPORTING CERTIFICATE FROM KEYSTORE AND TRUSTSTORE

If you want to send your certificates and keys from your keystore/truststore then, you can use the export operation to achieve that. You can then send these certificates and keys to your trusted partners and clients.

Steps to export certificate from the Keystore/Truststore

1. On the **Manage Keystore** screen, click the **Action** ☰ icon. This will show you a list of the menu items of the Action menu (see Figure 371).
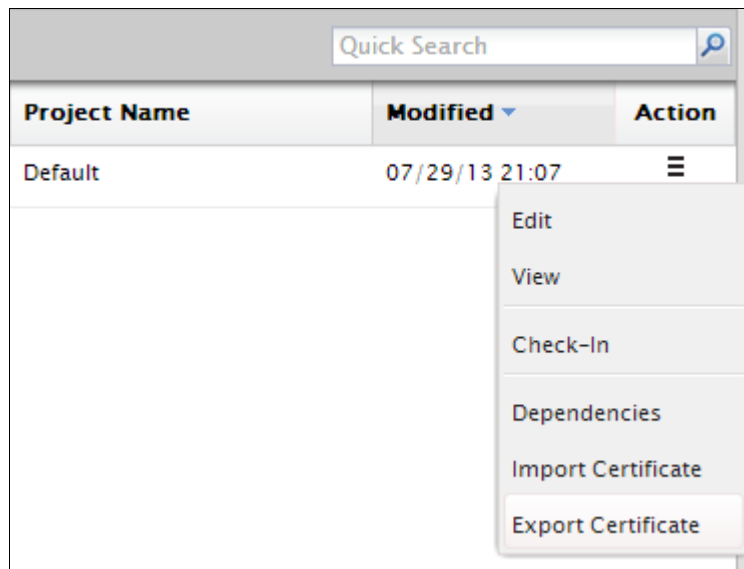
Figure 371: Create Keystore

2. Select the **Export Certificate** option. This action will show you the **Export Certificate** screen (see Figure 372).
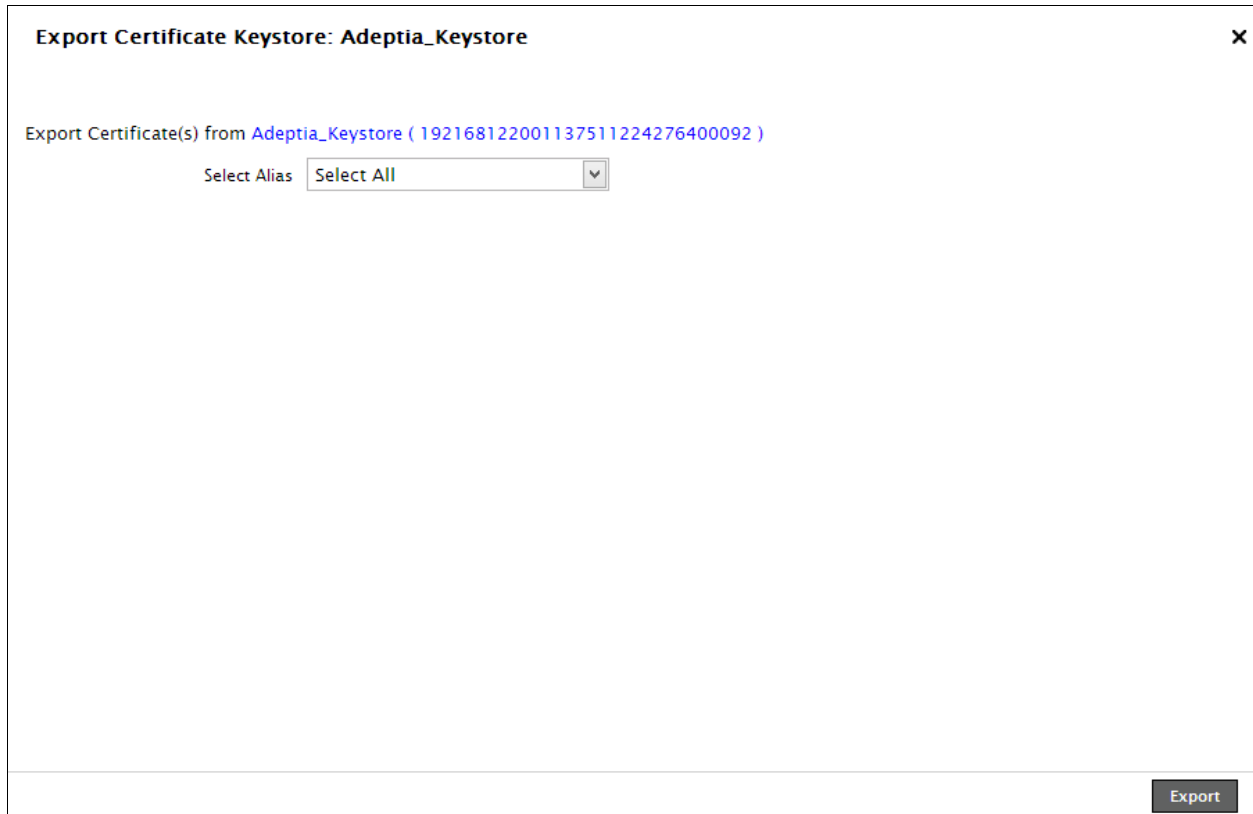
Figure 372: Export Certificate

3. Select the **Alias** name of the certificate, which you want to export and click the **Export** button. The certificate that you will select will be exported in **/ServerKernel/etc/security/WSdigitalcertificate** folder (see Figure 373).
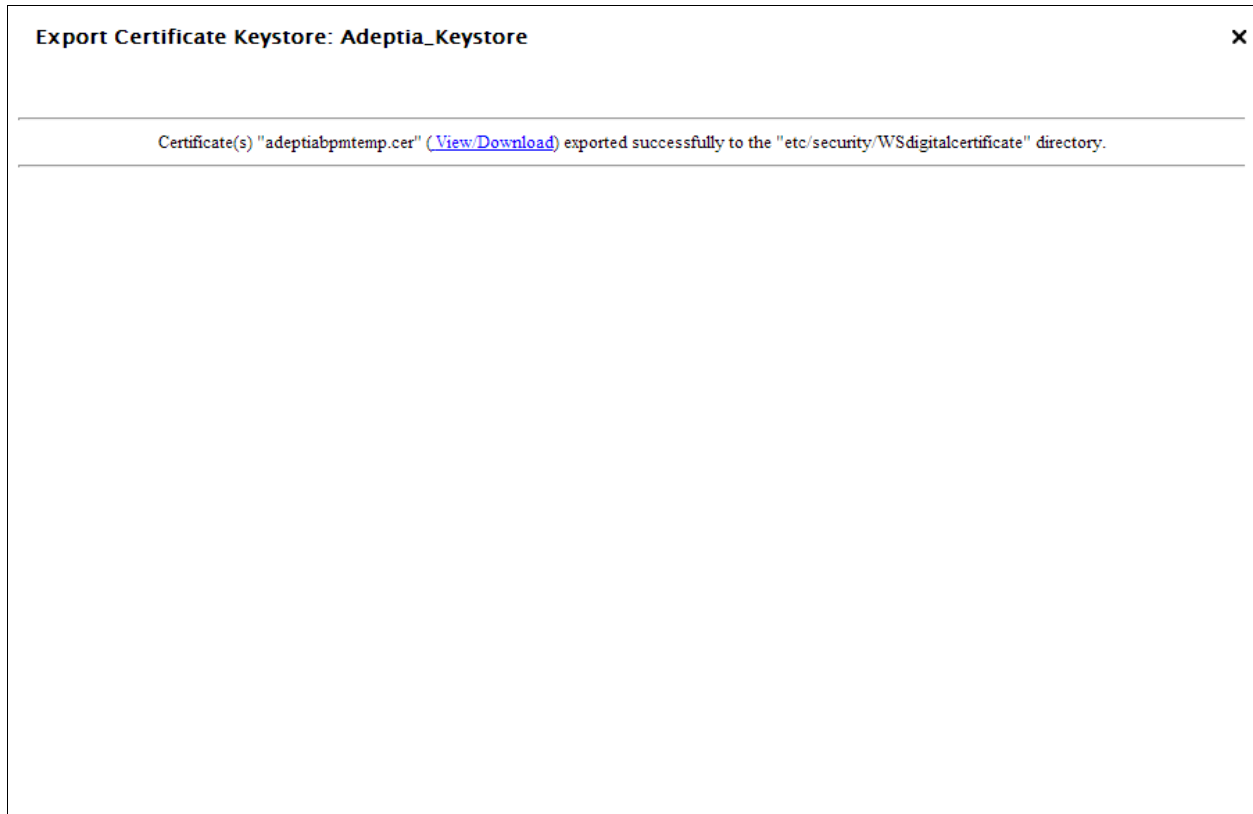
Figure 373: Download Certificate

4.   To view or download, the certificate click the **View/Download** link.

IMPORTING CERTIFICATE INTO KEYSTORE AND TRUSTSTORE

If you want to expand your already existing keystore/truststore then you can achieve this by importing certificates into your keystore/truststore.

Steps to import certificate into Keystore/Truststore

1.   On the **Manage Keystore** screen, click the **Action** ☰ icon. This will show you a list of the menu items of the Action menu (see Figure 374).
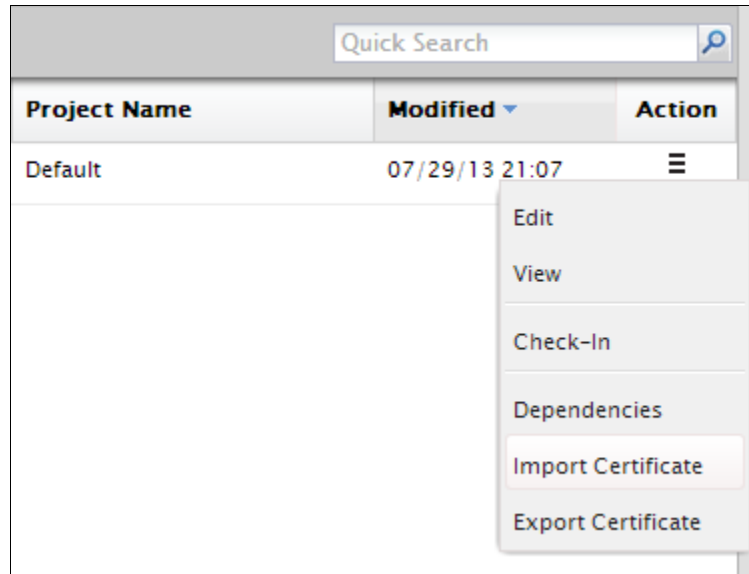
Figure 374: Create Keystore

2. Click the **Import Certificate** option. This action will show you the **Import Certificate** screen (see Figure 375).

Figure 375: Import Certificate

3. Click the **Browse** button and select the certificate that you want to import.

4. Enter an alias name in the **Alias Name** textbox.

5. Click the **Save** button. The certificate that you select will be imported in the keystore of your choice.

TRANSFORMING DATA

Adeptia Suite can transform any type of data into any another format i.e. it facilitates any-to-any data transformation. For example, the Adeptia Suite can transform a text file into an XML file. You can do data transformation in the following two ways:

- Using Data Mapper
- Using Record to Record Service

USING DATA MAPPER

Data Mapper is a visual data-mapping tool used for mapping elements in advanced data integration projects. This tool allows you to specify source and target schemas and to map data fields from source schema to target schema.

You can use the Data Mapper tool to map source schema elements to target schema elements. You can map one source schema element to a target schema element directly by drag and drop method. Additionally, this tool also offers certain mapping functions using which you can map source and target schema elements.

Furthermore, the Data Mapper supports multiple source and target schemas. This implies that you can select more than one schema at a time, both at the source and the target end. This facilitates mapping of multiple source and target schema elements.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Accessing Data Mapper
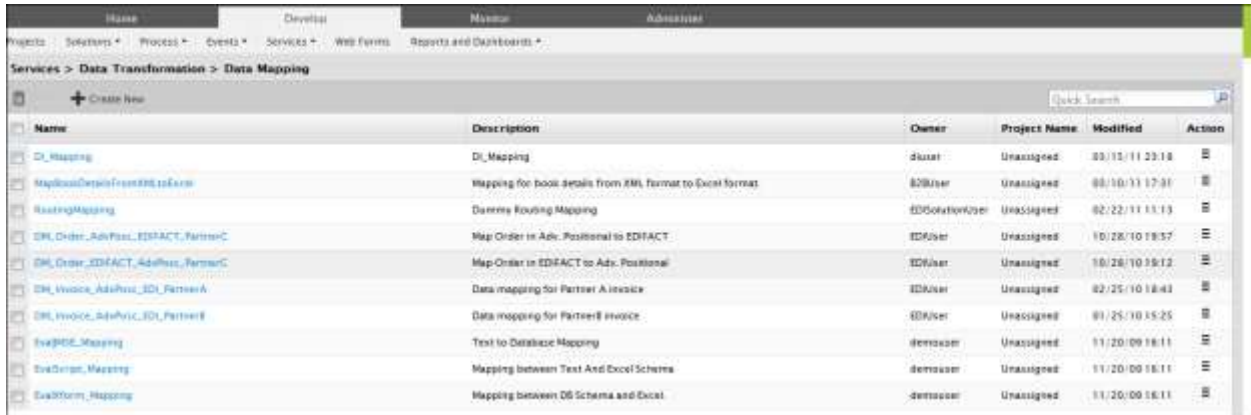
Pre- Requisites

- JRE 1.6 needs to be installed on your system to open the Data Mapper applet.
- Pop-up Blocker needs to be disabled in the web browser, to open the Data Mapper applet. By default, the *Pop-up Blocker* is enabled.

Steps to access Data Mapper

1. On the Adeptia Suite homepage, go to **Configure → Services → Data Transform** and then click **Data Mapping**.

This action will show you the *Manage Data Mapping* screen (see Figure 376).

Figure 376: Manage Data Mapping

2. Click the **Create New** link. The *Create Data Mapping* screen is displayed (see Figure 377).

Figure 377: Create Data Mapping

3. Enter the name and description of the new mapping activity in the textboxes **Name** and **Description** respectively.

4. Click the **Data Mapper** button. This displays the **Data Mapper** screen (refer to Figure 378).

> ℹ️ If you are starting the Data Mapper on your system for the first time, then a warning message is displayed that prevents you from starting this application. Ignore this message and click **Start** to continue.

> ℹ️ If you have *read-only* permissions, you can view a mapping activity in read-only mode. You can view the applied mapping, create new mapping rules, edit existing mapping rules and even run the simulation. For details, refer to the View Mapping in Read-Only Mode section.

5. Click **Advanced Properties** if you want to set options for splitting data. You can split the source data into different chunks. You can specify the size of chunks in terms of the number of records. In the output however, only one file is generated at the location specified in the target activity. To know more about splitting data, refer to the Splitting Source Data section.

> ℹ️ You can set the **Advanced Properties** at any time of the mapping activity.

6. Once you have set the Advanced Properties, click **Save** to save the splitting options.

7. Understanding Data Mapper Applet

The **Data Mapper** screen is displayed below:
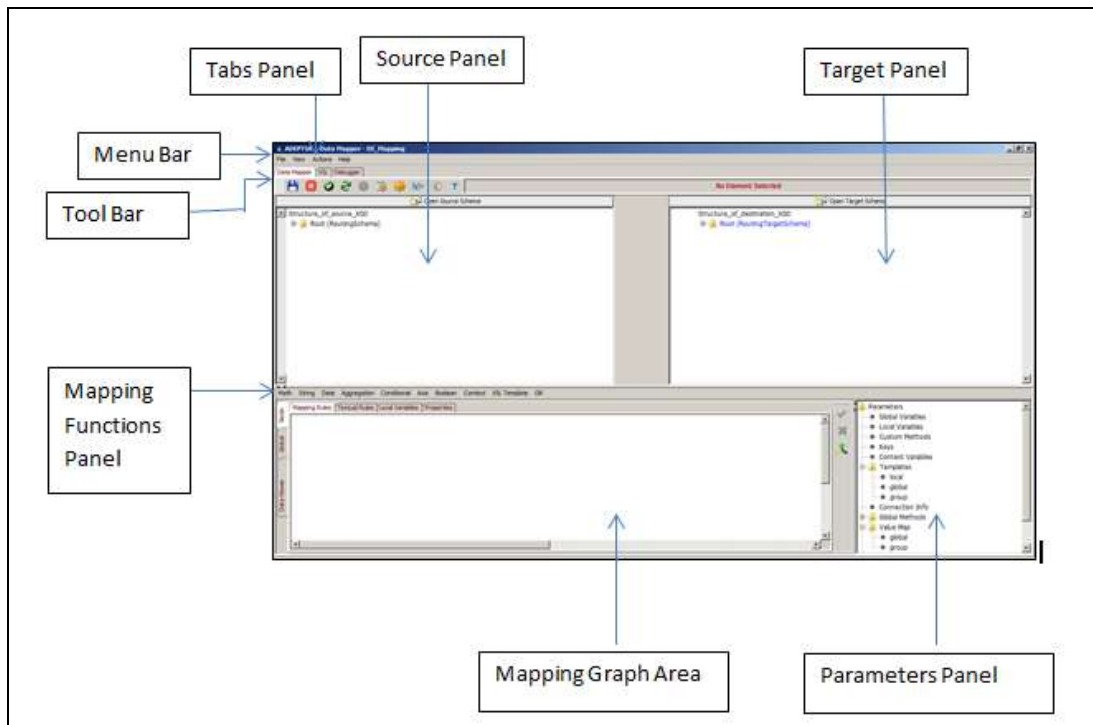
Figure 378: Data Mapper Applet

The Data Mapper screen is divided into eight sections. These are outlined as:

- Menu Bar
- Tabs Panel
- Tool Bar
- Source Panel
- Target Panel
- Mapping Functions Panel
- Mapping Graph Area
- Parameters Panel

Menu Bar

Options of the Menu Bar are explained in the table below.

Table 1: Options of Menu Bar

Menu Option	Sub-Option	Function
File	Load Schema	Load a source and target schema activity into the Data Mapper
	Save	Save mapping activity
	Exit	Exit Data Mapper
View	Enable Tool Tips For Source/Target Tree	Activate or deactivate Tool Tips to be displayed at source or target leaf elements. Tool Tips are always displayed as active for root elements.
	Move Connection Ends	Set the width of connecting lines. By default, it is set to 50px.
	View Mapping XML	Display generated XML file with line numbers. It is displayed in read-only mode.
Actions	Validate XSL	Validate the generated XSL file.
	Global Custom XSL Before	Add custom XSL code at the top of the mapping XSL.
	Global Custom XSL After	Add custom XSL code at the bottom of the mapping XSL.
	On Demand (optimized) loading of XML Schema tree	If the XSD is complex, then this option allows you to process only the root level element and not the complete XSD. Only when you expand the hierarchy elements, it processes the child elements and loads them into the memory. The hierarchy elements expansion is now displayed in the applet. This option is applicable only on XML schemas. It optimizes the processing of XML schemas and loads the XSD elements only up to 2 levels in the source and target panels. You need to click a hierarchy element to load its further child elements.
	Cache Included Schemas	This is applicable to all XML Schema which uses XMD. This option sets whether or not to cache the included xml schemas instead of inlining them as specified by the XML Specification.
	Tree Expand Level for	Defines the hierarchy level up to which the source and

Menu Option	Sub-Option	Function
	Optimized Loading	target files will be displayed for the schema loaded in Data Mapper. Hierarchy level is defined in the Tree Expand Level Dialog, which is opened when user clicks this menu option. By default, its value is 3 i.e. Data Mapper will display the hierarchy of source and target files for the respective schema up to level 3.
	Tree Expand Level for Easy Schema Parser	Defines the hierarchy level up to which the source and target files will process the schema to load it into the Data Mapper. You can define the hierarchy level in the Tree Expand Level Dialog box, it appears when you click on this menu option. The default value in the Tree Expand Level Dialog box is 10. This means that, the Data Mapper will display the hierarchy of source and target files for the respective schema up to level 10.
	Namespace	Manage Namespace
	Exclude Result Prefixes	Exclude a namespace prefix from the target element
	Enable DBQuery caching	Enable DBQuery cache. This implies that if the same DBquery is fired on another element, it will generate the result from the existing query, instead of creating a new connection. By default, the DBQuery cache is disabled.
	Search Element	Search an element in the Source or Target schema hierarchy on the basis of Wild Card character(s) Comments, Data Type, Current Mapping Rules, Documentation, and Extension Node Element in the tree node of the Data Mapper.
	Set Data Viewer Record Count	Set maximum number of records that can be shown in data viewer
	Custom Auto Map Options	Add custom options for Auto Mapper
	Value Map	Add options for value map
	Enable Quick Splitting	Splits data at source end and merges at target end

Menu Option	Sub-Option	Function
		automatically
	Import Mapping	Enables to map elements in a pattern that is similar to an existing mapping
	Set Character Set Encoding for Data Parsing	Enables to set character set encoding for the target schema before mapping the data elements
	Create Context Schema Definition	Context schema definition contains name of the context variable that you want to map to other element.
	Filter Unmapped Elements	Filter elements or attributes from appearing in the target XML
	C Data Section Elements	Enables to define C Data elements for the target schema which will be displayed on the Output section of the Debugger screen
	XSL Transformer	This option gives you the choice to select the parser that you would want to use to parse your mapping activity in the Data Mapper. You get to select from Xalan and Saxon transformers from the XSL Transformer Dialog box when you select this menu option.
Help	Data Mapper Help	Display online help for the Data Mapper section.
	Mapping Functions Help	Display online help for mapping functions.
	Tip of the Day	Displays the tips on start up.
	About Data Mapper	Display the About box for the Data Mapper tool.

Tabs Panel

Options of the Tabs Panel are explained in the table below.

Table 2: Options of Tabs Panel

Button	Name	Function

Button	Name	Function
	Data Mapper	Display the Data Mapper screen for mapping source and target elements.
	XSL	Display the generated XSL code with line numbers for the mapping activity.
	Debugger	Validate and view output of the mapping activity.

Tool Bar

Options of the Tool Bar are explained in the table below.

Table 3: Options of Tool Bar

Button	Name	Function
	Save Mapping	Save mapping activity
	Remove All Mappings	Remove all the mapping between the source and the target elements
	Validate XSL	Validate generated XSL
	Auto Mapper	Map the source and the target elements if the structure of the source and the target schemas and the names of the source and the target elements are similar
	One to One Mapping	Map all the source and the target elements under a parent element if the number of elements in the source and the target schemas are same
	Toggle Element Properties	Displays the property of the source or target element, if it is defined in the schema. To view the property, click this button and then click the element whose property you want to view.
	Value Map	Opens the Value Map Options dialog box.
	Custom Auto Map	To automatically map elements of source and target schemas where hierarchy and elements are different.

Button	Name	Function
	XSL Template(s)	To create XSL Template and further manage XSL templates from the Manage XSL Template screen
	Load Schema	Open source and target schemas

Source Panel

The Source Panel is used to display a source schema. All the elements of the source schema are listed in the Source Panel. When multiple source schemas are loaded, then all elements of each schema are listed under their respective source nodes.

Target Panel

The Target Panel is used to display a target schema. All the elements of the target schema are listed in the Target Panel. When multiple target schemas are loaded, then all elements of each schema are listed under their respective target nodes.

Mapping Functions Panel

The Mapping Functions Panel displays all mapping functions that can be used to map source and target schema elements. Mapping functions are supported by XSLT. However, the Data Mapper also includes some customized functions, which are not standard of XSLT. Refer to Using Mapping Functions for details on mapping elements using these functions.

In addition to the mapping functions, an option of XSL Template is also displayed on the Mapping Functions Panel. This option enables you to Add XSL Template and further manage XSL templates from the Manage XSL Template screen.

Mapping Graph Area

The Mapping Graph Area is used to map the source and the target elements. You can apply the mapping function between source and target elements in this section. Mapping of the selected target element is displayed in the Mapping Graph Area. This mapping is displayed in the form of Mapping Rules (graphical representation) or as Textual Rules (code representation). Additionally, you can view and set target element properties such as adding comments for target elements and also repeat occurrences of a target element based on the occurrences of a source element, by applying the For Each property. Further, you can apply sorting rules for elements and also set the Disable-Output-Escaping property.

Additionally, you can create Local, Global and Context Variables in Mapping Graph Area. You can also define Custom Methods and Key Functions in this section.

The Mapping Graph Area comprises of two tabs. These tabs further list sub tabs using which you can perform various functions. These are outlined in the table below.

Table 4: Tabs of Mapping Graph Area

Tab	Sub-Tabs	Function
Node	Mapping Rules	Display graphical representation of the mapping of source and target elements.
	Textual Rule	Display the textual code representation of the mapping of source and target elements.
	Local Variables	Create and define local variables for mapping source and target elements.
	Properties	Display and set properties for source and target elements. Enables you to add comments for elements and applies sorting rules for target elements. It allows you to set the *Disable-Output-Escaping* property.
Global	Global Variables	Create and define global variables for mapping source and target elements.
	Custom Methods	Create global methods for mapping source and target elements.
	Key Functions	Create and define keys for mapping source and target elements.
	Context Variables	Create and define context variables for mapping source and target elements.
	Connection Info	Create and define connection info variables for mapping source and target elements.
Data Viewer	Source	Preview Data of the uploaded file at the source end.
	Target	Preview Data at the target end according the uploaded source file and mapping rule applied.

The Mapping Graph Area also comprises of buttons. These buttons are displayed based on the selected tabs. All buttons of the Mapping Graph Area are explained in the table below.

Table 5: Buttons of Mapping Graph Area

Button	Name	Function
	Apply Mapping	Map the selected source elements to the selected target elements.
	Remove Mapping	Remove the mapping between the selected source and the target elements
	Pop Out Parameters Panel	Pop out the Parameters Panel and display it as maximized.
	Add Global/Local/Context Variable/Key	Add a new global, local, context variable or a key.
	Save Global / Local /Context Variable/Key	Save a new local, global, context variable or a key.
	Remove Selected Global/Local /Context Variable/Key	Remove the selected global variable, local variable, context variable or key.
	Remove all Global/Local/Context Variables/Keys	Remove all existing global variables, local variables, context variables or keys.
	Clears Global / Local variable name and value text fields	Clear all data entry fields while adding a local or global variable.
	Add New Method	Add a new custom method.
	Remove Selected Method	Remove the selected custom method.

> You can expand the Mapping Graph Area by clicking **Maximize** (▲) button displayed on the Split Bar below the Source and Target Panels. Similarly, by clicking **Minimize** (▼) button, you can restore the Mapping Graph Area to its original size. Alternately, you can drag the Split Bar to resize the Mapping Graph Area and Source and Target Panels.

Parameters Panel

The parameters listed in the Parameters Panel are explained in the table below.

Table 6: Parameters Listed in the Parameters Panel

Parameters	Description

Parameters	Description
Global Variables	Display a list of all the global variables defined for the mapping of source and target elements in the current mapping object.
Local Variables	Display a list of all the local variables defined for the mapping of source and target elements in the current mapping object.
Custom Methods	Display a list of all the methods defined for the mapping of source and target elements in the current mapping object.
Keys	Display a list of all the keys defined for the mapping of source and target elements in the current mapping object.
Context Variables	Display a list of all the context variables defined for the mapping of source and target elements in the current mapping object. All context variables created in the Data Mapper are transferred to the Process Flow Designer.
Templates	Display a list of all the XSL templates created for the mapping of source and target elements in the current mapping object.
Connection Info	Display a list of all connection info variables.
Global Methods	Display a list of all class files present in the Custom Classes folder.
Value Map	Display a list of value maps created for the elements

All parameters are displayed in this section as and when they are created in the mapping process.

You can remove a parameter by right-clicking the parameter and selecting the Remove option.

You can expand the Parameters Panel horizontally by clicking **Maximize** ( ) button displayed on the Split Bar left to the Parameters Panel. Similarly, by clicking **Minimize** ( ) button, you can restore the Parameters Panel to its original size. Alternately, you can drag the Split Bar to resize the Mapping Graph Area and Parameters Panel.

Mapping Elements

The process of mapping elements comprises of various steps. These are outlined as:

- Load Source and Target Schemas
- Map Source and Target Elements
- Save Mapping and Exit Data Mapper

Load Source and Target Schemas

Steps to load Source and Target Schemas

1. Click the **Load Schema** (⊞) button on the Tool Bar (see Figure 379)

Figure 379: Load Schema button

Or click the **File** menu and select the **Load Schema** option (see Figure 380).
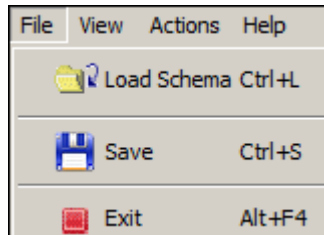
Figure 380: File Menu in Data Mapper

This action will show you the **Select Schema** screen which displays a list of existing schemas (see Figure 381).
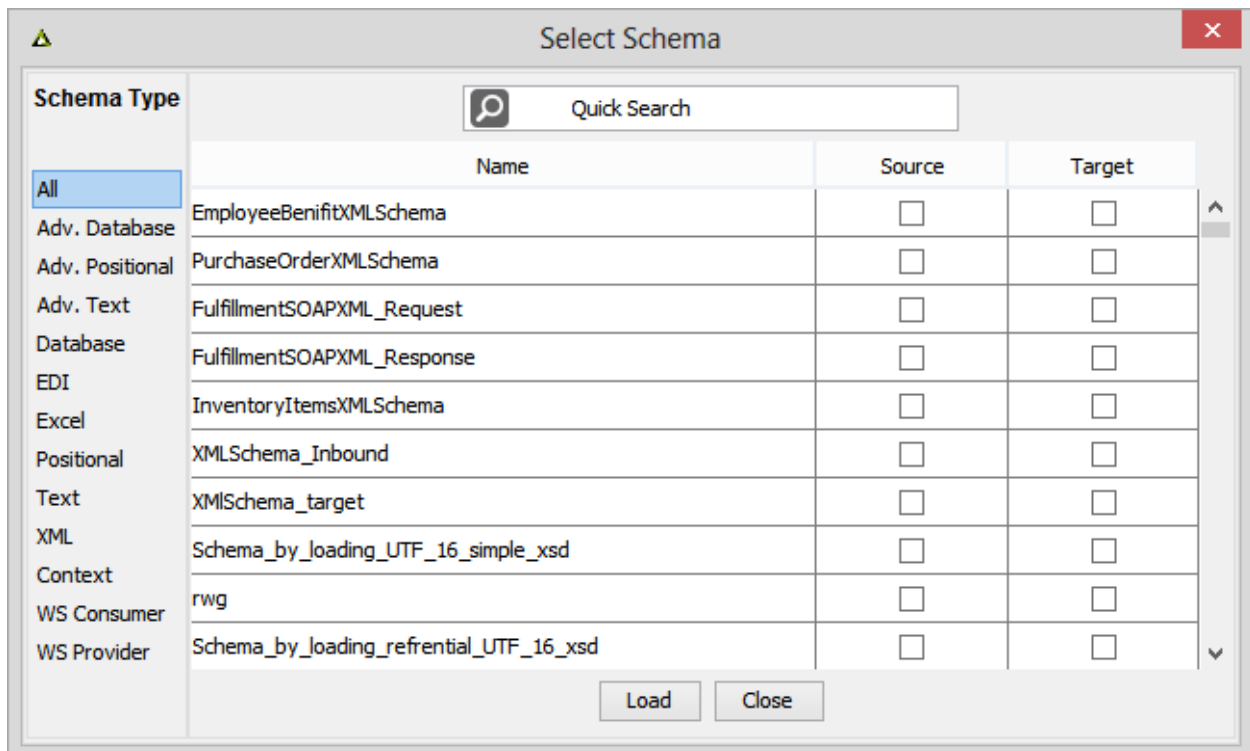
Figure 381: Select Schema

> ℹ️ If you create a new schema, then it will not be displayed in this list. To refresh the list of schemas click the **Synchronize** button.

2. Select the schema that you want to load. This action will enable the **Load** button.

The *Select Schema* window supports the following functionality:

- At times, the list of schemas is very long. In such a case, you can search for schemas to be loaded, based on the *schema name* or *type*. Enter the name of the schema to be searched in the **Quick Search** text box and as you type letters, the search field will dynamically search for the values defined in all the schema types and update the table accordingly.

- To refine the search, you can select the schema type from the **Schema Type** column. The table will display you only the schema types that you would select. For example, if you select the Excel schema type button then, you will only see the Excel Schemas and the table will be updated accordingly. By default, you will be able to see all the schema types in alphabetical order.

- To load a schema, search the schema type and select the checkbox(s) corresponding to the schema type. You can select both the source and target schemas for the schema type. In addition, you can select different source and target schema type. This way, you can load multiple schemas at the same time. You can also select all the checkboxes to load all the schemas. There is no limit to the number of schemas that you can load at the same time.

- You can simultaneously load multiple web service schemas along with other schemas.

- If you have not created any a particular schema type the no schema will be displayed on clicking the respective schema type button.

3. Click the **Load** button after you have selected the schema(s) to open. The schema(s) that you will select, will be loaded into the Data Mapper window.

> **i** Click the **Close** button to close the *Select Schema* window.

4. Click the **Expand** (+) button to expand and display all elements of the schemas in their respective panels (see Figure 382).
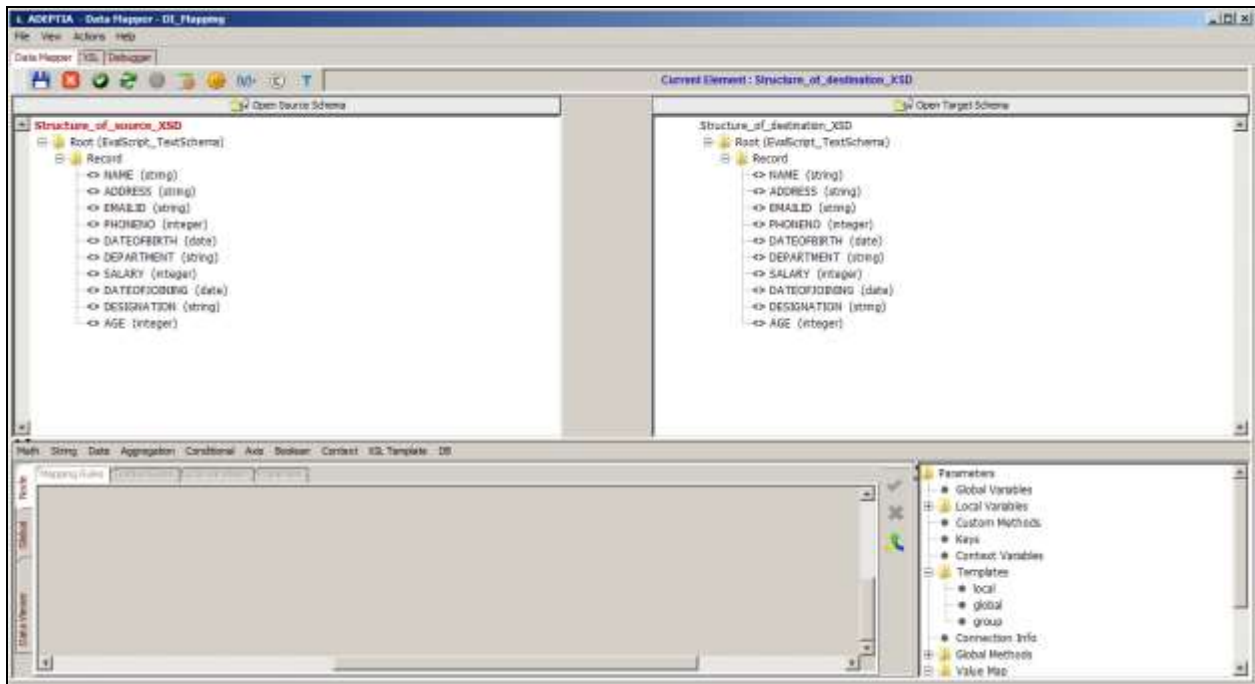
Figure 382: Source and Target Schema Elements

> ℹ The Data Mapper now gives you the choice to select an XSLT transformer for your data mapping activity. It now supports a new transformer Saxon along with the old transformer Xalan. For more details on the new transformer, please refer to the Configuring XSLT Transformer section.
>
> The Data Mapper tool allows you to remove a loaded schema. For details, please refer to the Removing Schema section.

You can identify the elements in the Source and Target Panels by the legends displayed before the name of the element. These legends are explained in the table below.

Table 7: Legends of Elements

Legend	Description
<>	Leaf Element
@	Attribute Element

> ℹ If you do not load any schema, then all the tabs of the Data Mapper appear as disabled.

Configuring XSLT Transformer

The Adeptia Suite provides two XSLT processors for transforming data mapping activity.

      a.   Saxon (New Transformer)

      b.   Xalan (Old Transformer)

Saxon transformer is much faster than Xalan. By default, the Data Mapper selects the Saxon transformer to transform all of your new mapping activity.

You can change the parser of any existing Data Mapping activity by following the steps below:

1. Click on the **Action** menu of the Data Mapping activity of your choice and then select the **Edit** menu option (see Figure 383).

Figure 383: Editing A Data Mapping Activity

2. On the **Edit Data Mapping** screen, click on the **Data Mapper** button to edit the mapping activity (see Figure 384).

Figure 384: Edit Data Mapping Activity Screen

3. In the Data Mapper, click on the **Actions** menu and then select the **XSL Transformer** menu option.

4. In the **XSL Transformer** dialog box, select the **Saxon** radio button and click **Ok**.

5. Click on **Save** button to save the mapping of the Data Mapper.

6. On the **Edit Data Mapping** screen, click on the **Save** button to edit the mapping activity. This action will display you a confirmation message (see Figure 385).

Status

Data Mapping activity: "Data_Mapping_Text"
updated successfully.
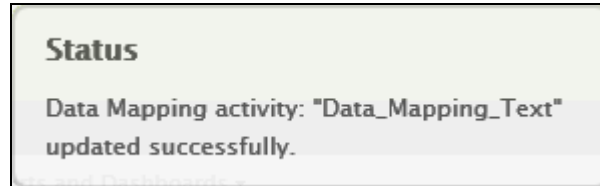
Figure 385: Confirmation Message

If you wish to revert to the old transformer (Xalan Transformer) then, you can achieve that by the following steps:

1. In the Data Mapper, click on the **Actions** menu and then select the **XSL Transformer** menu option.

2. In the **XSL Transformer** dialog box, select the **Xalan** radio button and click the **OK** button.

3. Click on the **Save** button to save the mapping activity.

> ℹ️ If you want to use the Saxon Transformer then follow these steps:
>
> 1. In the **XSL Transformer** dialog box, select the **Saxon** radio button and click the **OK** button.
> 2. Click on **Save** button to save the mapping activity.

Search Element in Source or Target Schema Tree

At times, when the source or target schemas are quite large, then searching an element can be very cumbersome. The Data Mapper applet eases this task by allowing you to search for an element in a source or target schema.

Steps to search an element in a source or target schema hierarchy

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Actions** menu and select **Search Element** option (see Figure 386).

   Alternately you can press **<Ctrl> + <F>** on the keyboard.
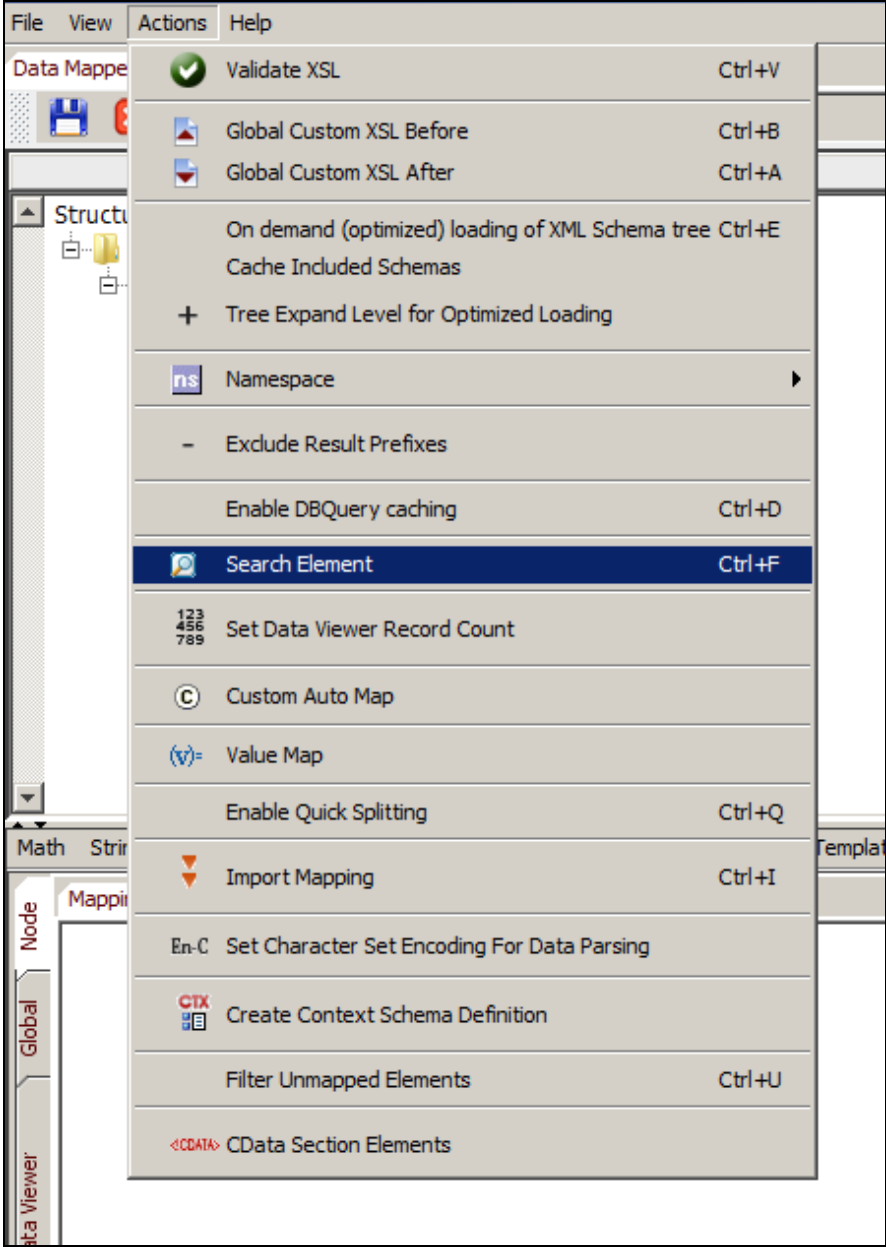
Figure 386: Select Search Element from Actions menu

The **Element Search Dialog** window is displayed (see Figure 387).
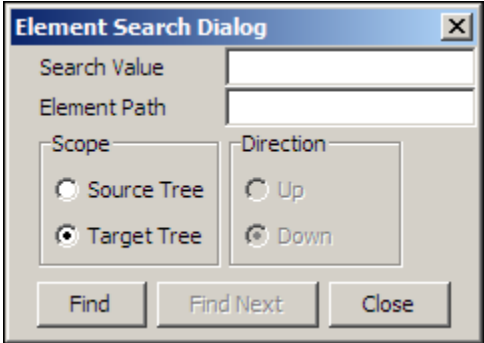
Figure 387: Element Search Dialog Box

3. Enter the name of the element that you want to search for, in the *Search Value* field. You can also use Wild Card character(s) to search for an element. The Xpath of the element is automatically displayed in the *Element Path* field.

4. Select the appropriate option in the *Scope Panel*, to search the element in the Source or Target schema hierarchy. For example, if you want to search in the Source schema hierarchy, then select *Source Tree* option. Only one option can be selected at a time. By default, *Target Tree* is selected (see Figure 388).
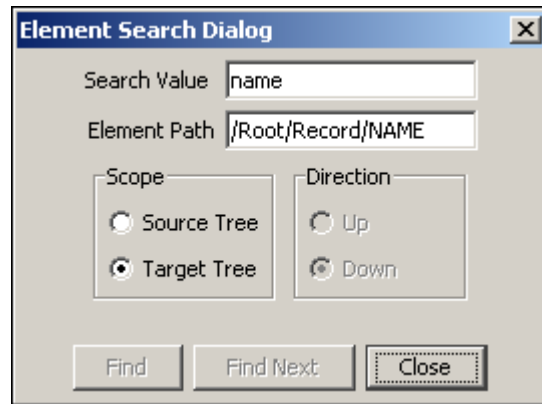
Figure 388: Enter Parameters in Element Search Dialog Box

As per the enhanced functionality of the search element, you can now also search the element on the basis of comments, Data Type, Current Mapping (Rules), Documentation and Extension Node Element in the tree node of the Data Mapper.

5. Click **Find**. This searches for the first occurrence of the element in the selected hierarchy. If the element match is found, then that element is selected and highlighted. The Xpath of that node is displayed in the *Element Path* field (see Figure 389).
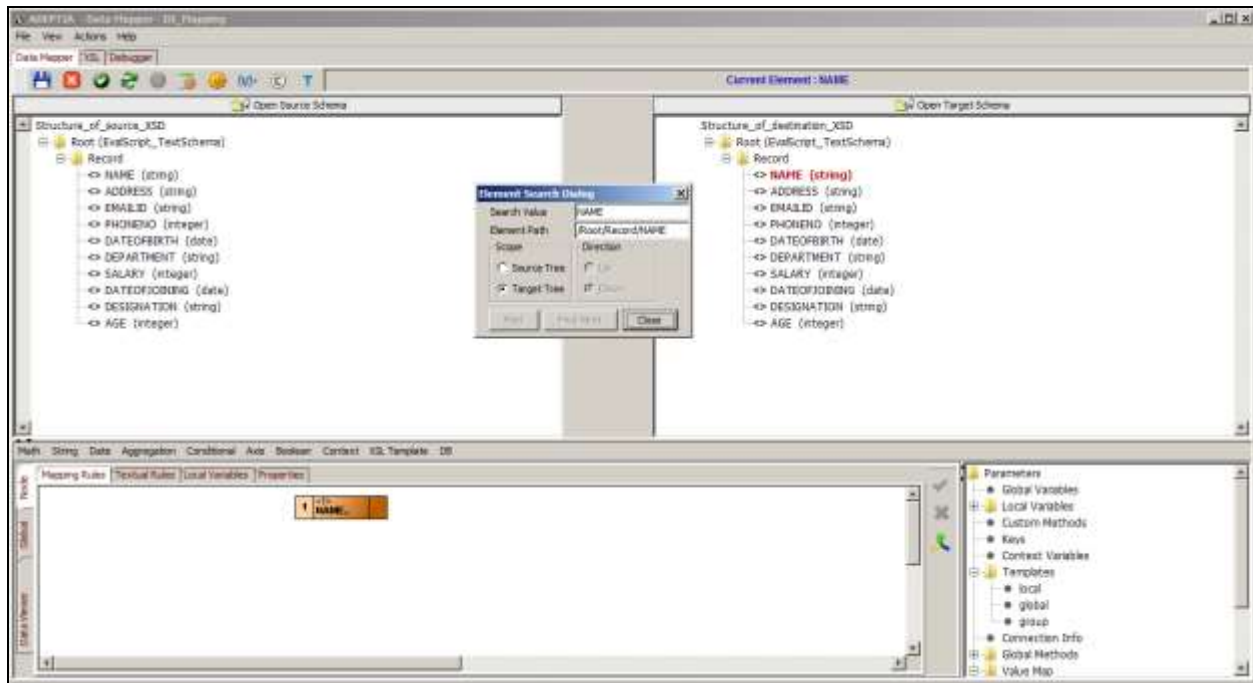
Figure 389: Element Match Found

6. If multiple matches are found for the search criteria, then the *Direction Panel* and the **Find Next** button is activated (see Figure 390). You can select the direction in which you want to search in the selected hierarchy. For example, if you want to search upwards in the hierarchy, select *Up* option. Only one option can be selected at a time. By default, *Down* is selected.
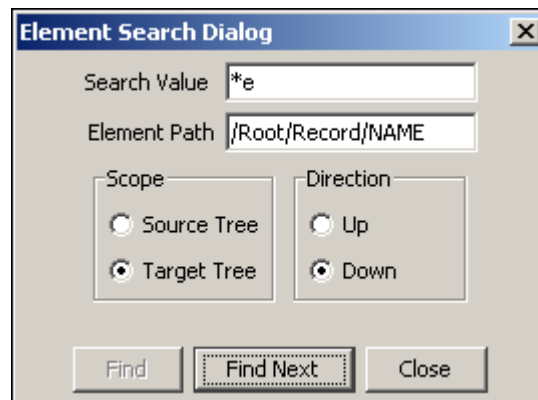
Figure 390: Multiple Matches Found

7. Click **Find Next** to search for the next element in the hierarchy, based on the selected direction. Once the element match is found, click **Close** to close the Search Element dialog box.

In case no element match is found, then a warning message is displayed (see Figure 391).
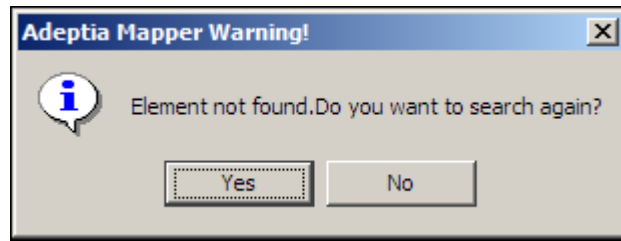
Figure 391: Adeptia Mapper Warning

8.   Click **Yes** to search again, else click **No** to close this screen.

Map Source and Target Elements

You can map source and target elements using any of the listed methods:

- Drag and Drop Approach
- Buttons on the Tool Bar
- Copy/Paste Mapping
- Mapping Functions

Map Elements Using Drag and Drop Approach

This is the default and most commonly used method for mapping source and target elements.

Steps to map elements using Drag and Drop approach

1.   Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2.   Click a source element and drag it to the desired target element. A line is displayed, indicating the mapping between the selected source and target element.

3.   The graphical representation of the above mapping is displayed in the Mapping Graph Area (see Figure 392).
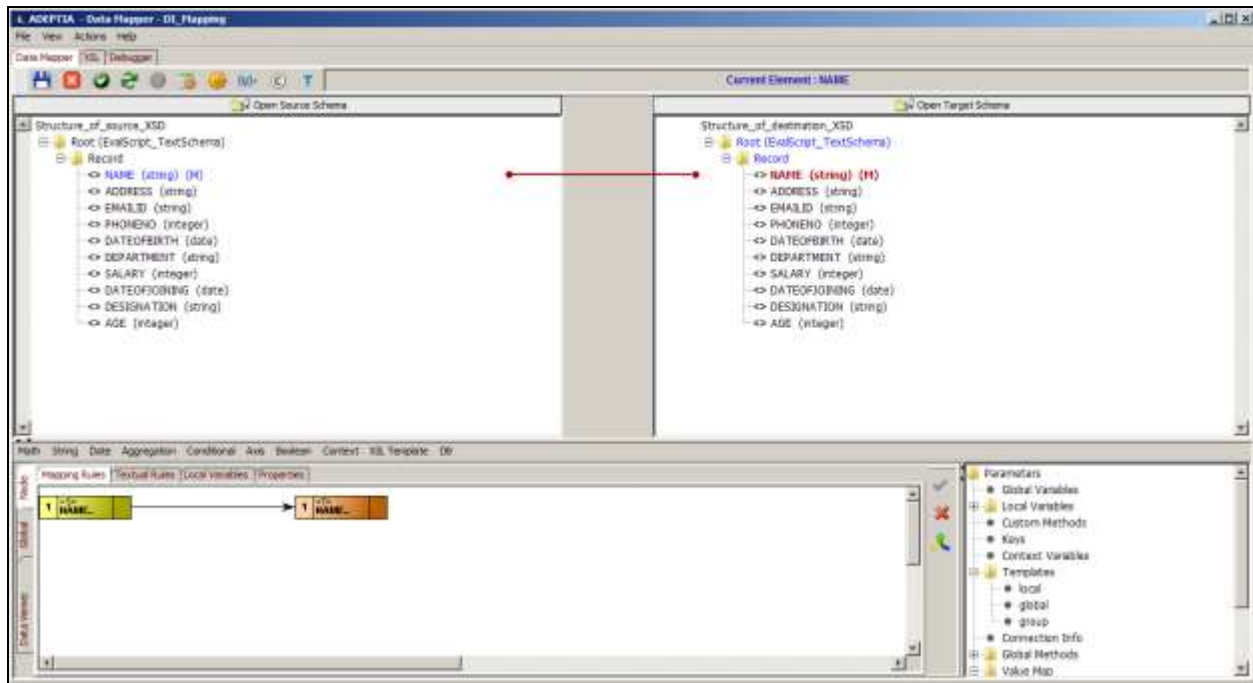
Figure 392: Map Source and Target Element using Drag and Drop Approach

> Once a source and target element is mapped, the letter **(M)** is displayed next to each mapped source and target element. This signifies that the target element has been mapped to a source element. Refer to Table of Suffixes for details on suffixes displayed next to an element.

4. Similarly, drag and drop each source and target element that you want to map. The mapping between all source and target elements will be displayed (see Figure 393).
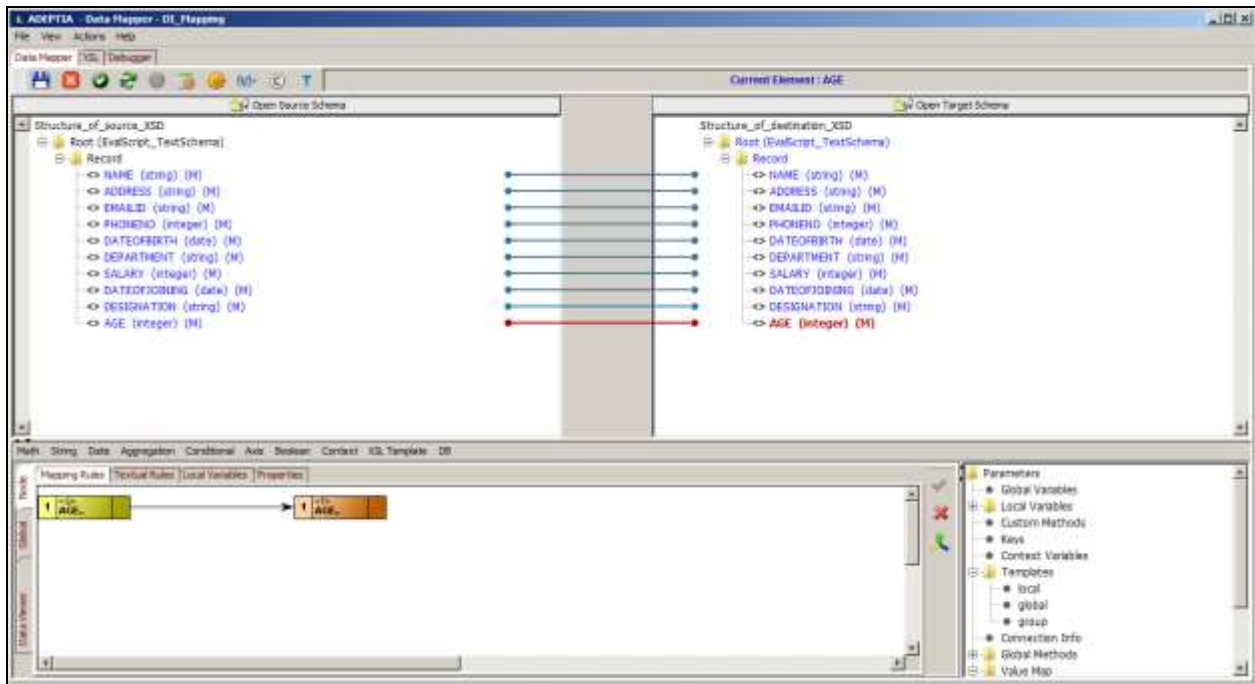
Figure 393: Map Source and Target Elements

5. If you have loaded multiple source and target schemas, then drag and drop the source and target elements you want to map. The mapping between these elements will be displayed (see Figure 394).
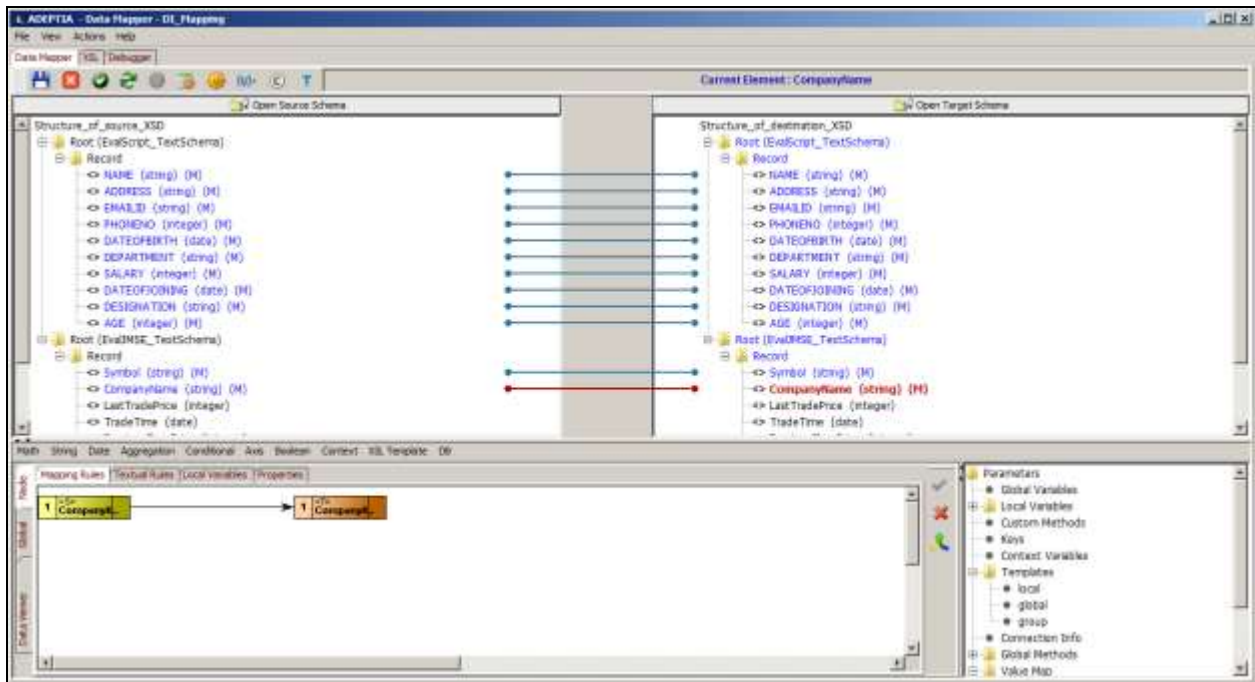
Figure 394: Map Multiple Source and Target Schema Elements

6. Save the mapping activity and exit the Data Mapper.

> **i** If you are mapping multiple source and target schema elements, then you need to assign data streams, before saving the mapping activity.

> **i** Once you have mapped source and target elements, you can view and validate the generated mapping XSL, from the Data Mapper screen. You can also view the target XML and view and validate mapping output from this screen.

Map Elements using Buttons on the Tool Bar

You can map source and target elements using certain buttons on the Tool Bar. These buttons are explicated as:

- One To One Mapping (⏸)
- Auto Mapper (🔄)
- Remove All Mappings (❌)

One to One Mapping

If the number of leaf elements of the parent element in the source and target schema is same, then you can use the One to One mapping button to map all the source elements to the corresponding target elements.

Steps to use One to One mapping

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click and drag the parent element of the source schema to the parent element of the target schema. This will apply template of the source parent element on the target parent element, and activate the **One to One Mapping** button.

3. Click **One to One Mapping** (⏸) button. All the leaf elements of the parent element in the source schema will be mapped to their respective leaf elements of the parent element in the target schema.

> **i** Only leaf elements are mapped using this button. It does not map complex elements. To map complex elements, you need to use the drag and drop method.

> **i** If multiple schemas are loaded, then dragging a source parent element will map all leaf elements of schemas displayed previous to the current schema.
>
> Moreover, in multiple schemas, mapping can be performed between parents at any level, if the number of their leaf elements is the same.

Auto Mapper

If the hierarchy and the names of the complex elements are similar, then you can use the **Auto Mapper** option to map the source elements to the corresponding target elements. In case of complex elements, the hierarchy and the name of all elements must be the same.

Steps to use the Auto Mapper

1.   Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes. Additionally, the hierarchy and name of the all elements is the same (see Figure 395).
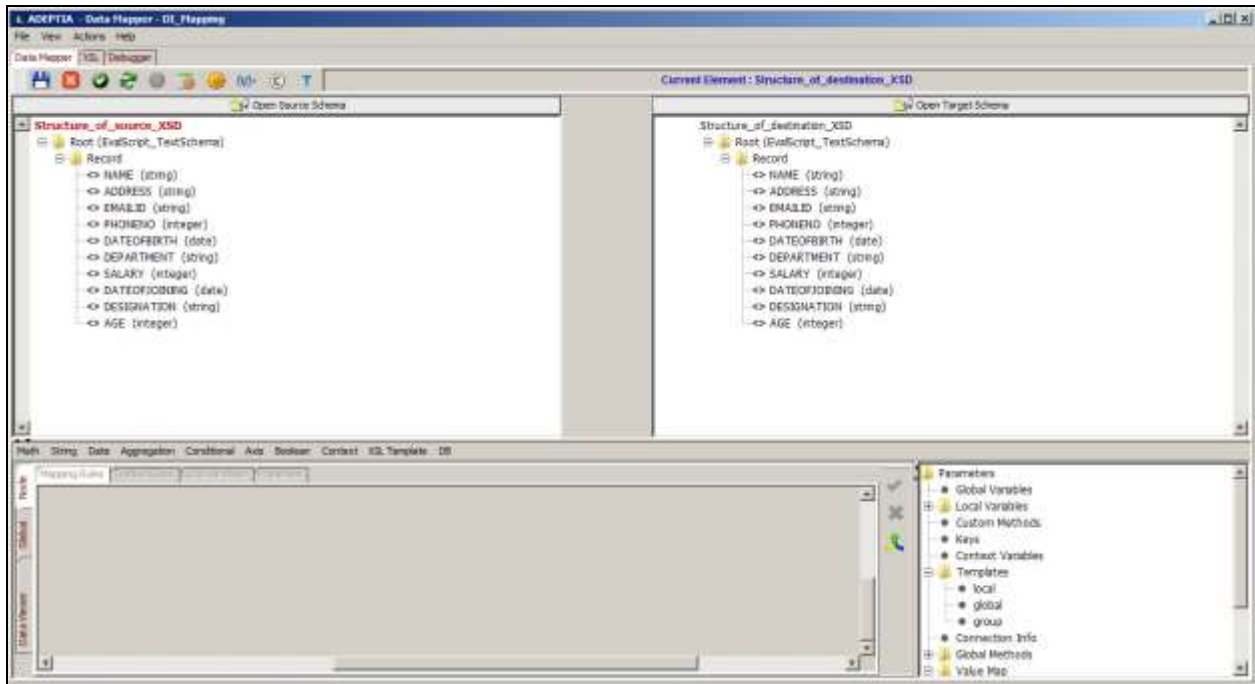
Figure 395: Same Hierarchy and Element Names

2.   Click **Auto Mapper** ( ) button. The **Auto Mapper Options** dialog box is displayed (see Figure 396).
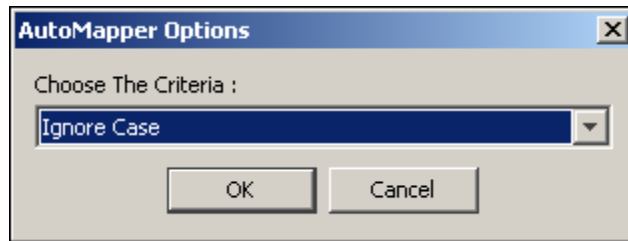
Figure 396: Auto Mapper Options

3.   Select the mapping criteria from the **Choose the Criteria** dropdown list. Its options are listed as:

- **Ignore Case:** The source and the target elements are mapped even if they are of different case. Their attributes are not mapped.

- **Case Sensitive:** The source and target elements are mapped only if they are of the same case. Their attributes are not mapped.

- **Ignore Case and Include Attributes:** The source and target elements and their attributes are mapped even if they are of different case.

- **Case Sensitive and Include Attributes:** The source and target elements and their attributes are mapped, only if they are of the same case.

- **Consider Only Leaf Element Count:** The source and target elements are mapped only if the number of leaf elements in the source schema and target schema are the same. It is not necessary that names of source and target elements are similar. Their attributes are not mapped.

- **Consider Only Leaf Element Count and Include Attributes:** The source and target elements and their attributes are mapped only if the number of leaf elements in the source schema and target schema are the same. It is not necessary that names of source and target elements are similar.

4. Click **OK** button. All elements of the source and target schema will automatically be mapped based on the selected criteria (see Figure 397).
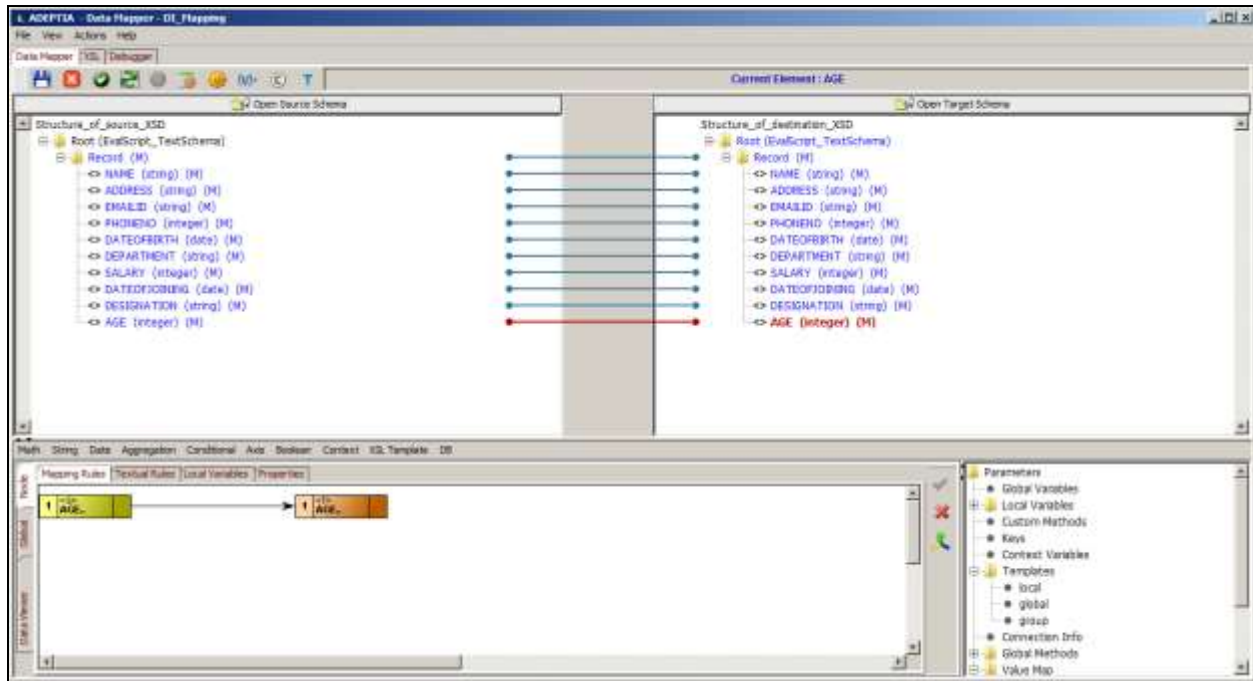
Figure 397: Mapped Elements using Auto Mapper

Remove All Mappings

You can use the Remove All Mappings option to remove all mappings from the Data Mapper.

Steps to remove all mappings between source and target elements

1. Click **Remove all Mapping** ( ) button. The **Remove Options** screen is displayed (see Figure 398).
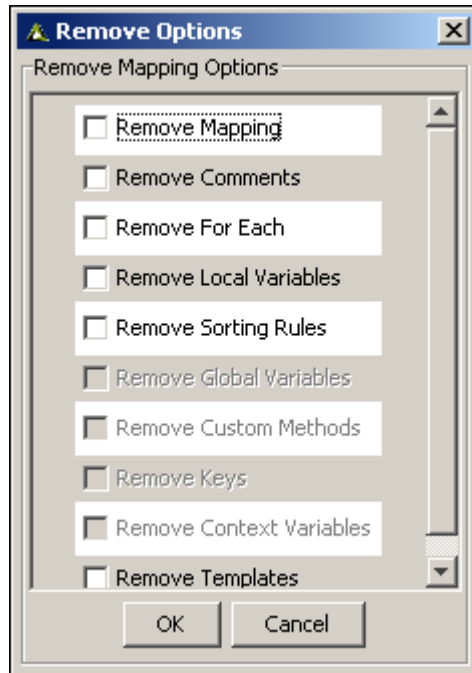
Figure 398: Remove Options

This screen displays a list of the properties, variables, custom methods, keys and templates associated with a mapped element, which can be removed with the mapping.

> The *Remove Mapping*, *Remove Comments*, *Remove For Each* and *Remove Local Variables* options are always enabled. The other options are enabled only if they have been defined for the mapped element.

2. Select the checkbox(s) of the options that you want to remove and click **OK** button. All the selected options and all mappings between source and target elements will be removed.

> You can remove mapping associated with each element individually. For details, refer to the section Remove Mapping of an Element.

Custom Auto Map

The **Auto Mapper** feature can be used only when the elements of source and target schema are at the same hierarchy level and have the same names. However, if you want to automatically map the elements when the names of the elements of source and target schemas are different, you cannot use this feature. For example, if the source schema has elements, EmpFirstName and EmpLastName and the target schema has the elements, firstName and lastName then you cannot define mapping between these two schemas using the Auto Mapper feature.

To define a mapping between the schemas when the elements of source and target schema are at the different hierarchy level (which may include elements at the different parent and child level) and have the different names, you can use the **Custom Auto Map** feature. This feature enables you to define the mapping between such schemas

where elements to be mapped are stored in different parent and child level and in addition elements name are different.

Scope of a Custom Auto Map

You can also select the scope of a Custom Auto Map at the time of defining and saving it. Scope of a Custom Auto Map is the context within which it is defined and is accessible within or across the user groups. A Custom Auto Map can be defined in any of the following scope:

- **Global**: The Custom Auto Maps defined within Global scope are available within all the mapping activities. Once you create a global Custom Auto Map in a mapping activity, you can use it in all the mapping activities.

- **Group**: The Custom Auto Maps defined within Group scope are available only within the specific user group.

By default, a Custom Auto Map is saved in the Global scope and in the Parameter Panel; it is added and displayed under the folder **Custom Auto Map/Global**. If you select to save the Custom Auto Map in the **Group** scope then in the Parameters Panel, it is added and displayed under the folder **Custom Auto Map/Group**. You can also change the scope of a Custom Auto Map from Group to Global directly from the Parameters Panel by right-clicking the Custom Auto Map and selecting the **Move to Global** option. However, you cannot change the scope of a Custom Auto Map from Global to Group.

The high-level steps to use Custom Auto Maps are:

- Defining a Custom Auto Map
- Activating a Custom Auto Map
- Using a Custom Auto Map in Mapping

In addition, you can also manage a Custom Auto Map from the Parameters Panel.

Defining a Custom Auto Map

You can define a Custom Auto Map by both manually providing the names of the source and target elements to be mapped in the Custom Auto Map Dialog screen or by defining the names of source and target elements to be mapped in a CSV file and then loading the CSV file in the *Custom Auto Map Dialog* screen. Loading a CSV file is useful when you have a large set of source and target elements to be mapped.

Defining a Custom Auto Map Using a CSV File

Steps to Manually Define a Custom Auto Map

1. Ensure that the source and target schemas are loaded in the Data Mapper and all their elements are listed under their respective nodes (see Figure 399).
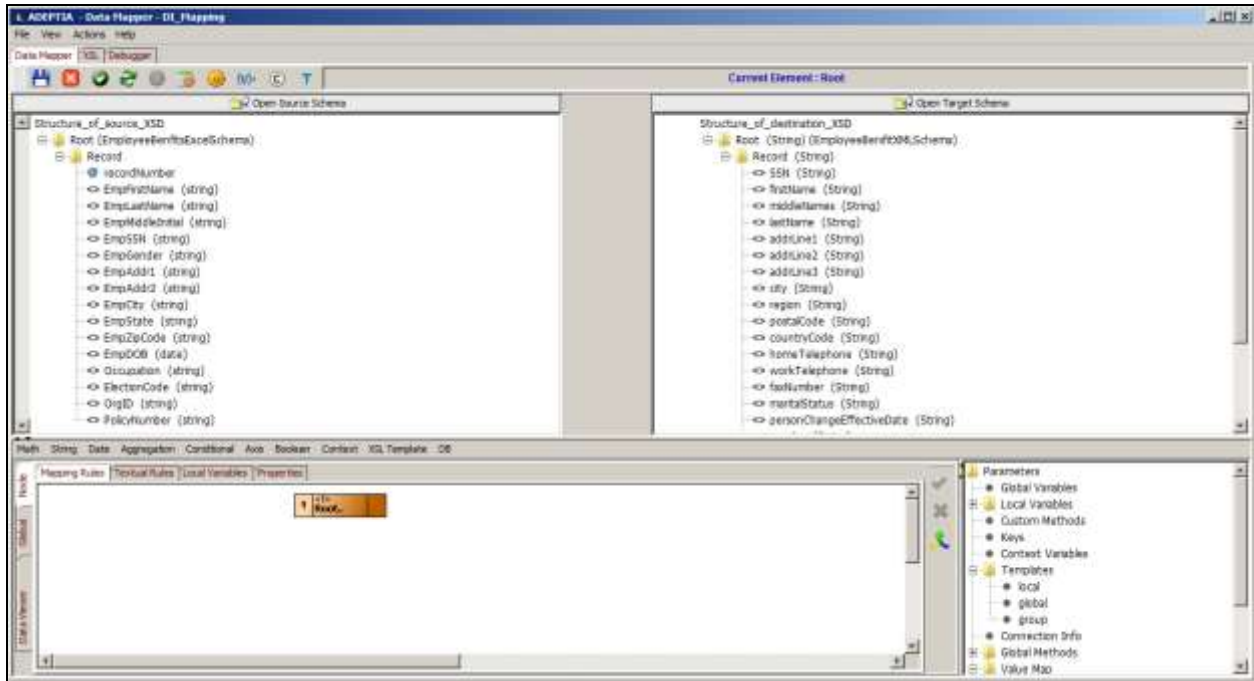
Figure 399: Source and Target Schemas with different Element Names

2. Click the **Custom Auto Map** ©️ button on the tool bar or select **Custom Auto Map** from the **Actions** menu.
    The *Custom Auto Map Dialog* screen is displayed (see Figure 400).
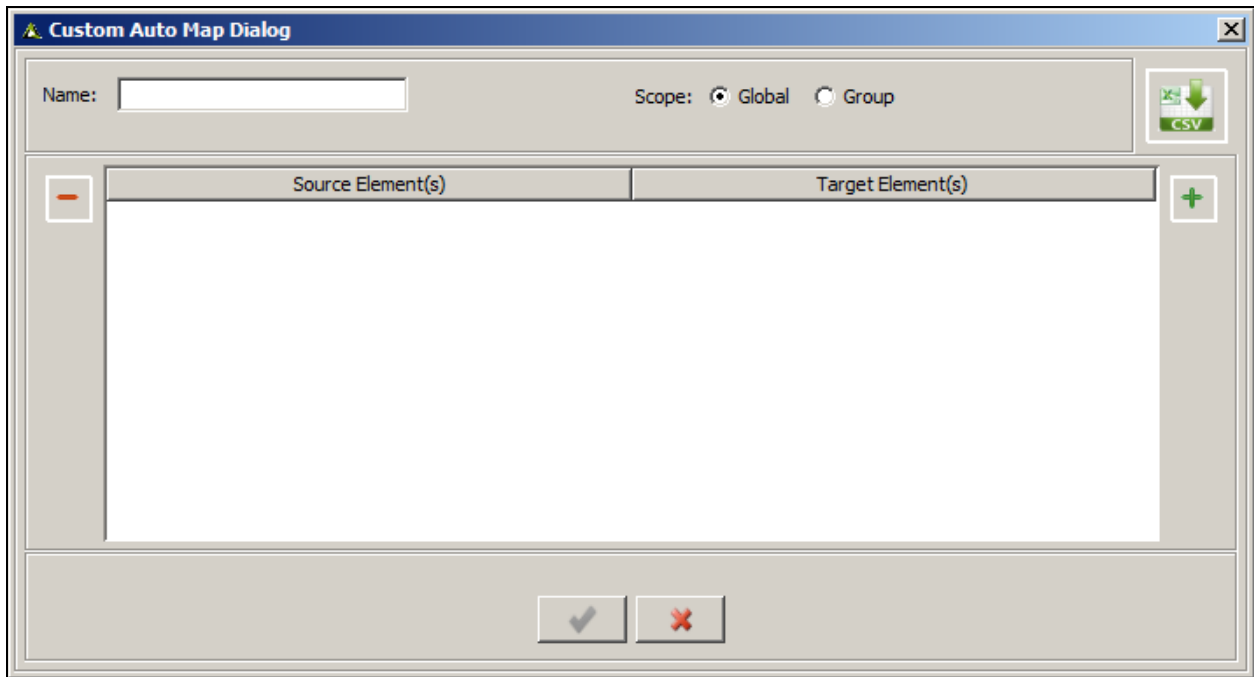
Figure 400: Custom Auto Map Dialog screen

3. Enter the name of Custom Auto Map in the **Name** textbox.

4. Select the scope of the Custom Auto Map. By default, the radio button **Global** is selected and a Custom Auto Map is saved in the Global scope.

> **i** If you want to save the Custom Auto Map within the current user group, select the **Group** radio button. This will save the Custom Auto Map as the group Custom Auto Map and can be used in any mapping activity within the current user group. In the Parameters panel, the Custom Auto Map will be displayed under the folder hierarchy Custom Auto Map/Group.

5. Click the **Add** button to add a new row for **Source Element** and **Target Element** columns. You can also add a row by pressing the **Enter** key. This will add the row immediately next to the row which is currently selected.

6. Enter the name of the source element for which you want to define Custom Auto Map in the **Source Element** column.

7. Enter the name of the target element to which you want to map the source element specified in previous step, in the **Target Element** column (see Figure 401).

> **i** If you need to delete any row, select the respective row and click the **Delete** button.
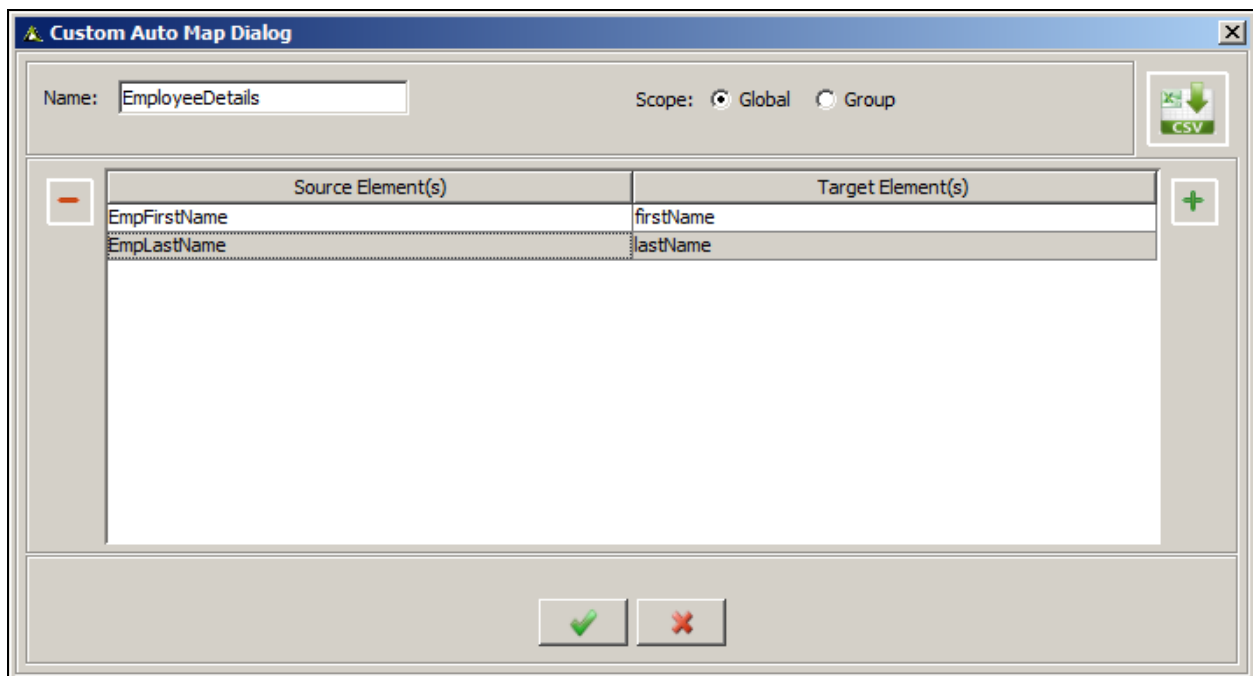
Figure 401: Custom Auto Map Dialog

8. Click the **Save & Close** button to save the Custom Auto Map. This will add the Custom Auto Map in **Custom Auto Map** hierarchy in the **Parameter Panel**. Similarly you can add more Custom Auto Map (see Figure 402).
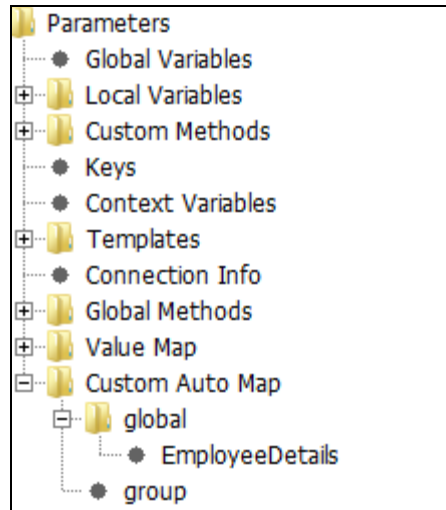
Figure 402: Parameters Panel

> ℹ️ If you need to close the Custom Auto Map without saving it, click the **Close** ❌ button.

Defining a Custom Auto Map Using a CSV File

The **Custom Auto Map** feature also enables you to load a **Comma Separated Values (CSV)** file. You can use the set of values from the csv file which are separated by comma as a Map set for your process flow. For example, if you want to map the following source and target elements:

Source Element	Target Element
EmpFirstName	firstName
EmpLastName	lastName
EmpMiddleInitial	middleNames

Then, you can define the set of values in a csv file as:

```
EmpFirstName,firstName
EmpLastName, lastName
EmpMiddleInitial, middleNames
```

Steps to Define a Custom Auto Map Using a CSV File

1. In the *Custom Auto Map Dialog* screen, enter the name of Custom Auto Map in the **Name** textbox.

2. Click the **CSV** button to load a **csv** file if you want to map the values using the values defined in the csv file. The server will consider the comma separated pair of values as the source and target elements to be mapped (see Figure 403).
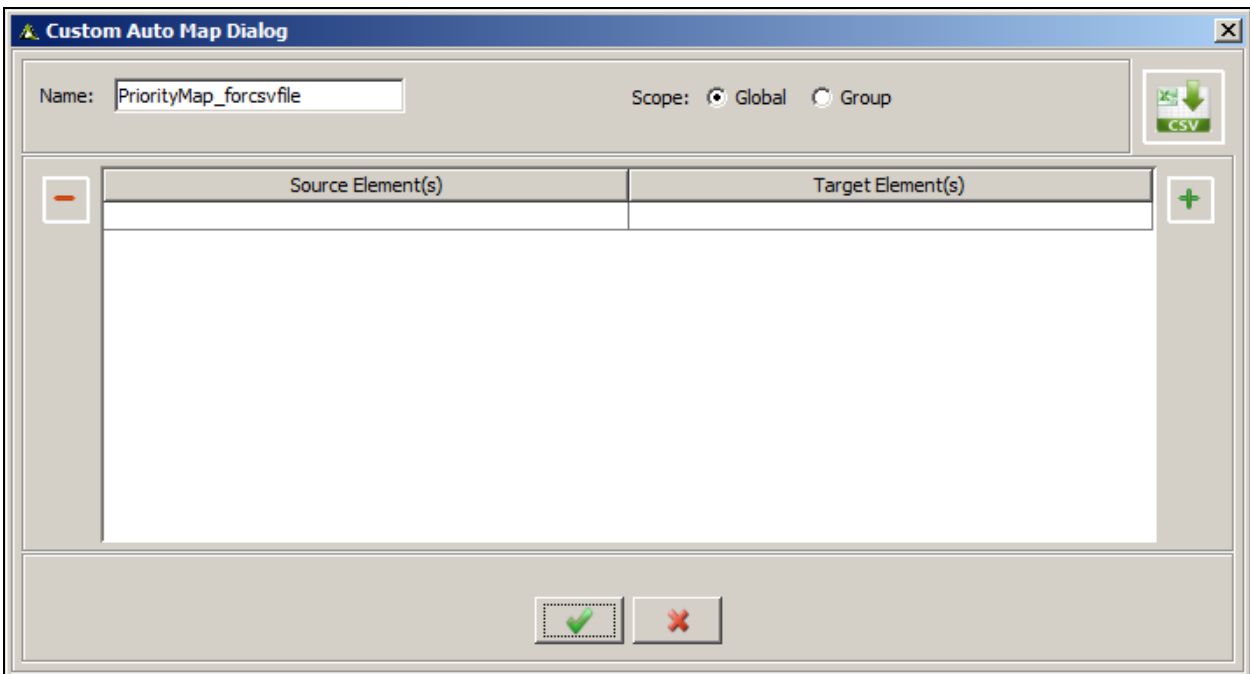
Figure 403: Custom Auto Map Dialog: Load CSV

An **Open** window is displayed.

3. Browse and select the respective csv file.

4. Click **Open** to upload the csv file. This will populate the source and target elements columns with the values defined in the CSV file. .

5. Select the scope of the Custom Auto Map (see Figure 404).
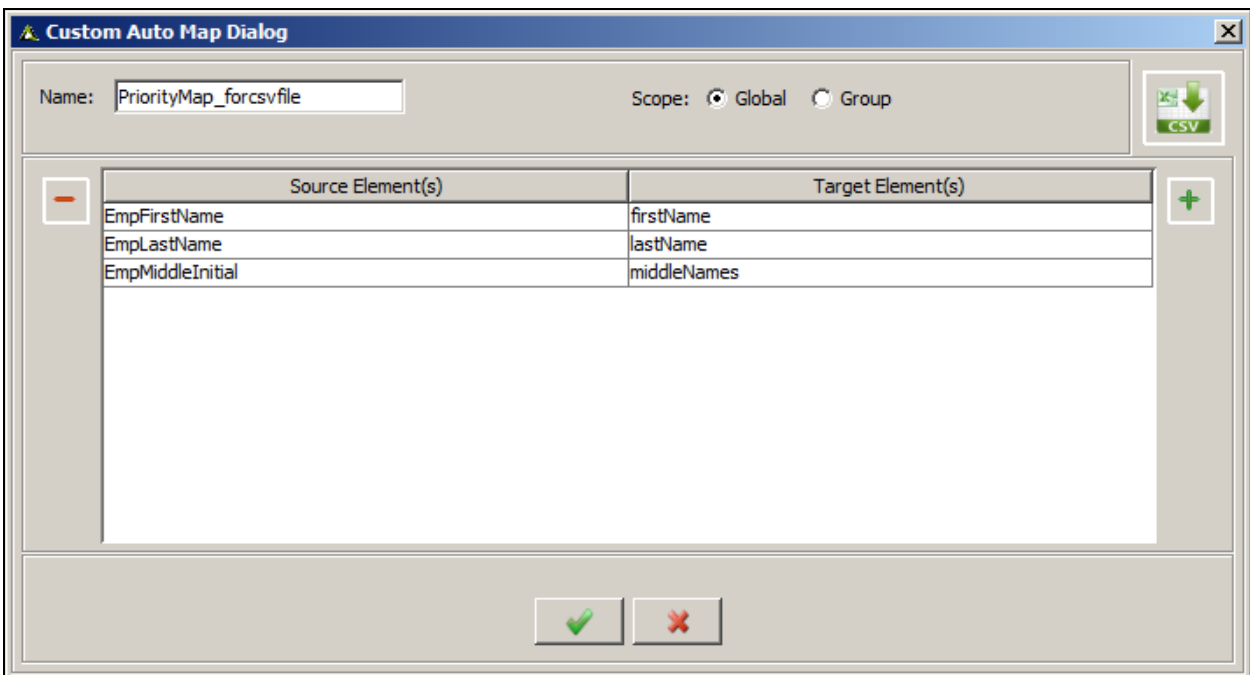
Figure 404: Custom Auto Map Dialog

6. Click the **Save & Close** [button image] button to save the Custom Auto Map. This will add the Custom Auto Map value map in **Custom Auto Map** hierarchy in the **Parameter Panel** (see Figure 424).
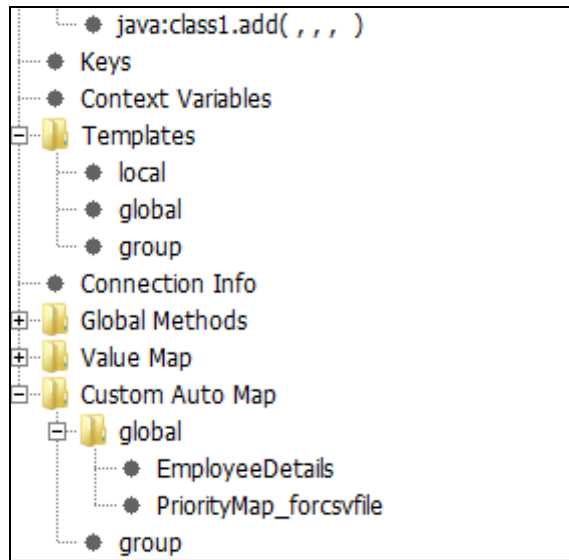
Figure 405: Parameters Panel

Similarly you can add more Custom Auto Maps.

Activating a Custom Auto Map

When you define a Custom Auto Map, by default it is in deactivated state. To use a Custom Auto Map, you need to first activate it. Once you have activated the Custom Auto Map, you can use it in your mapping. Note that only activated Custom Auto Maps can be used in a mapping.

Steps to Activate a Custom Auto Map

1. In the Properties Panel, select the Custom Auto Map which you want to activate to use in a mapping.

2. Right-click the Custom Auto Map and select the option **Activate** (see Figure 406).
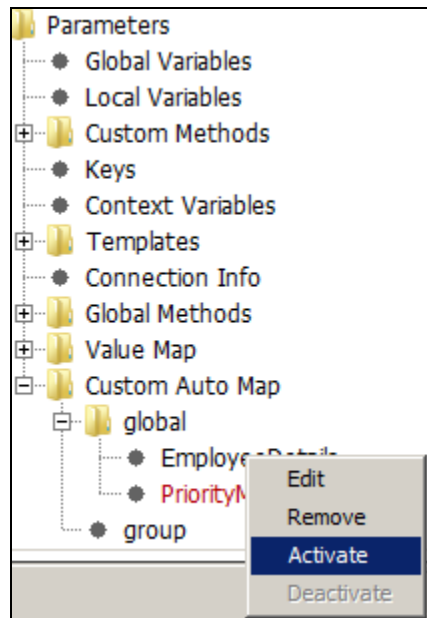
Figure 406: Parameters Panel: Custom Auto Map Activate option

The status of the Custom Auto Map changes to **Active** (see Figure 407).
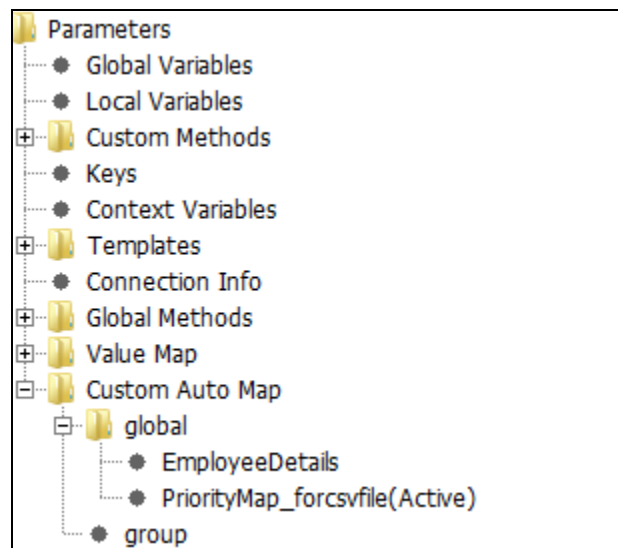
Figure 407: Parameters Panel: Custom Auto Map Status

You can now use this Custom Auto Map in your mapping. Similarly, right-click the Custom Auto Map and select the option **Deactivate** to deactivate a Custom Auto Map.

Using a Custom Auto Map

After activating a Custom Auto Map, you can use it in your mapping. Note that only one Custom Auto Map can be activated in the current mapping.

Steps to Use the Custom Auto Map in a Mapping

1. Load the respective source and target schema.

2. Create and activate the Custom Auto Map.

3. Map the parent record of the Source schema to the parent record of the Target schema.

4. Right-click the parent record of the target schema and select **Connect Matching Record** options (see Figure 408).
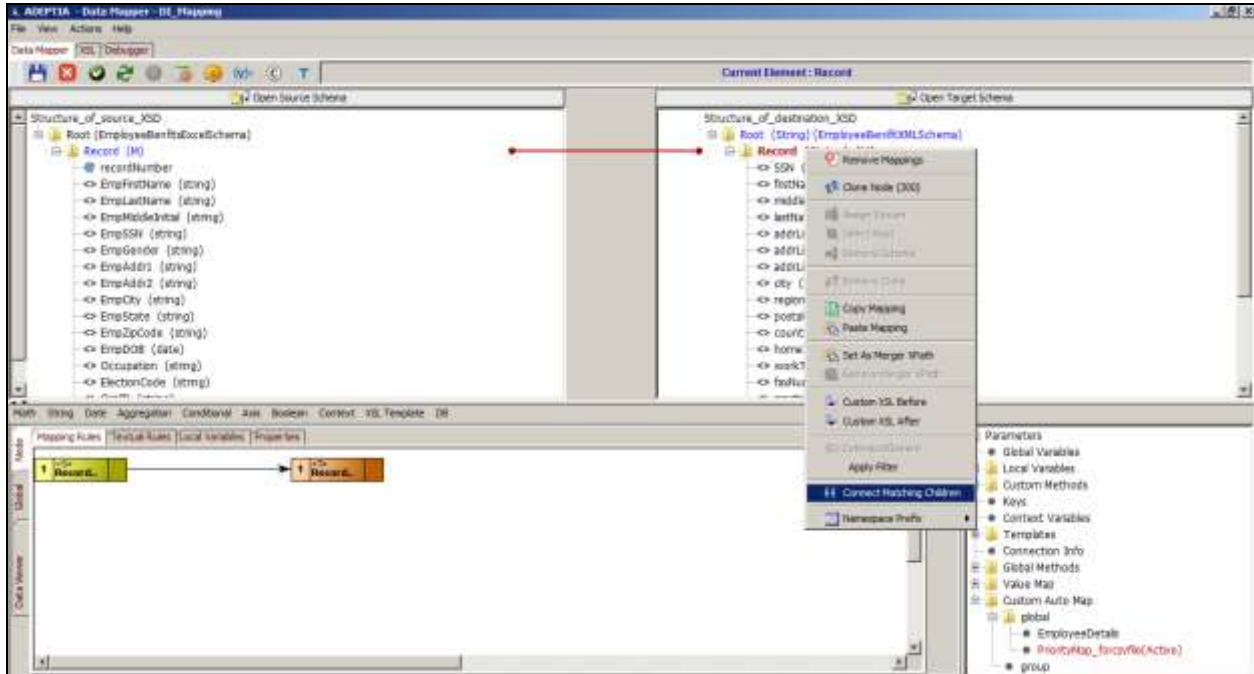
Figure 408: Select Connect Matching Children

The **Connect Matching Children Dialog** window is displayed (see Figure 409).
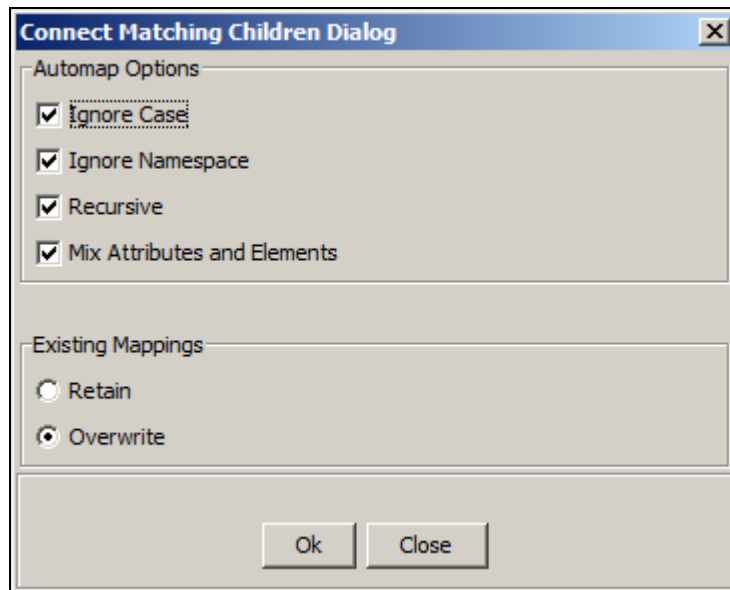
Figure 409: Connect Matching Children Options

5. Select the mapping criteria from the **Automap options** list. Its options are listed as:

- **Ignore Case:** The source and the target elements are mapped even if they are of different case. Their attributes are not mapped.

- **Ignore Namespace:** The source and target elements are mapped, when their names are same but source schema has any namespace prefix.

- **Recursive:** Elements of parent level as well as all child level with the corresponding target elements.

- **Mix Attributes:** Attributes of source and target schemas are mapped.

6. Select the mapping criteria from the **Existing Options** list. These options are :

- **Retain:** If any source and target elements are already mapped, those mapping will not be overwritten.

- **Overwrite:** Overwrites all the existing mappings.

7. Click **OK**. This will map source and target schema as per the criteria selected (see Figure 410).
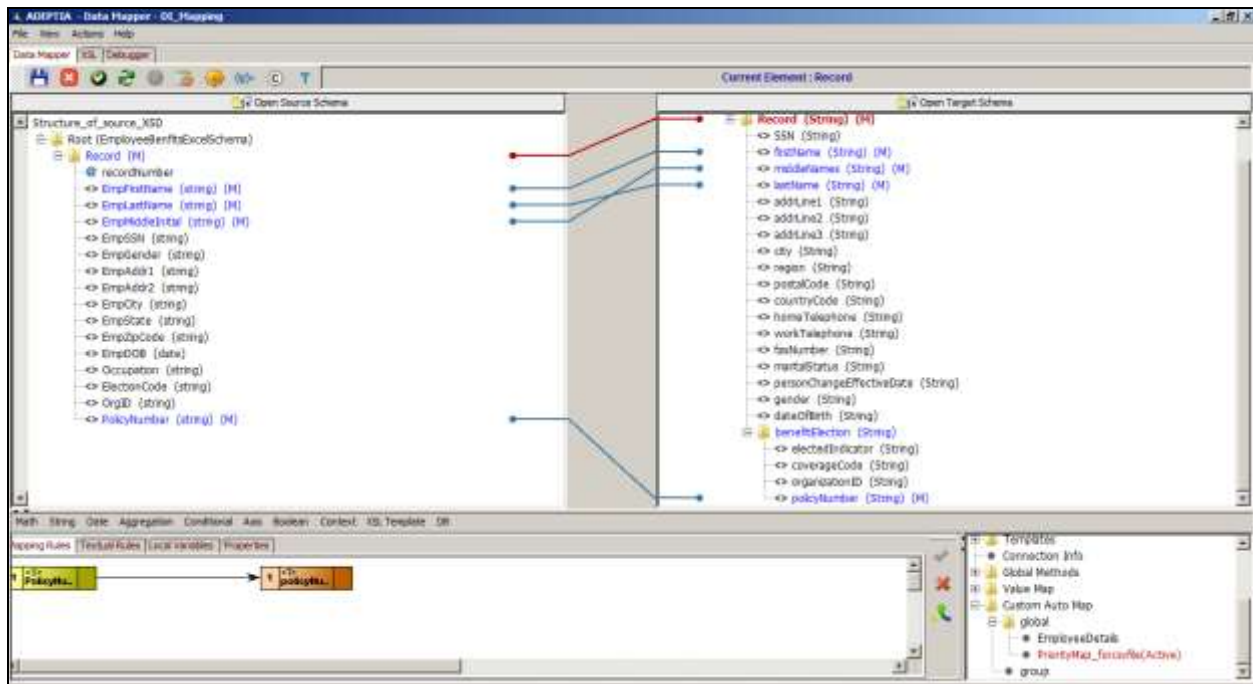
Figure 410: Source and Target elements are mapped

Managing a Custom Auto Map from Parameters Panel

You can also manage the Custom Auto Map from the Parameters Panel. When you right-click the Custom Auto Map in the Parameters Panel, you can perform the following operations on a Custom Auto Map:

- Edit a Custom Auto Map

- Move a Custom Auto Map from Group to Global

- Delete a Custom Auto Map

Editing a Custom Auto Map

In edit mode, you can edit the name of the Custom Auto Map and the source and target elements to be mapped. Note that you cannot edit the scope of a Custom Auto Map in edit mode. The radio buttons to select the scope becomes non-editable once you save the Custom Auto Map. However, you cannot edit the Custom Auto Map when it has been already been used in the mapping and that mapping has been saved.

Steps to Edit a Custom Auto Map

1. In the Properties Panel, select the Custom Auto Map to be edited.

2. Right-click the Custom Auto Map and select the option **Edit** (see Figure 406).
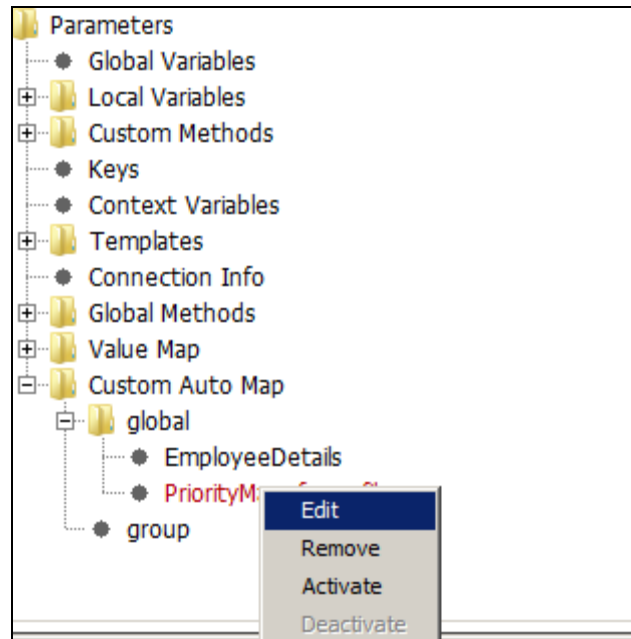
Figure 411: Parameters Panel: Custom Auto Map Edit option

The Custom Auto Map is open in **Edit** mode (see Figure 412).
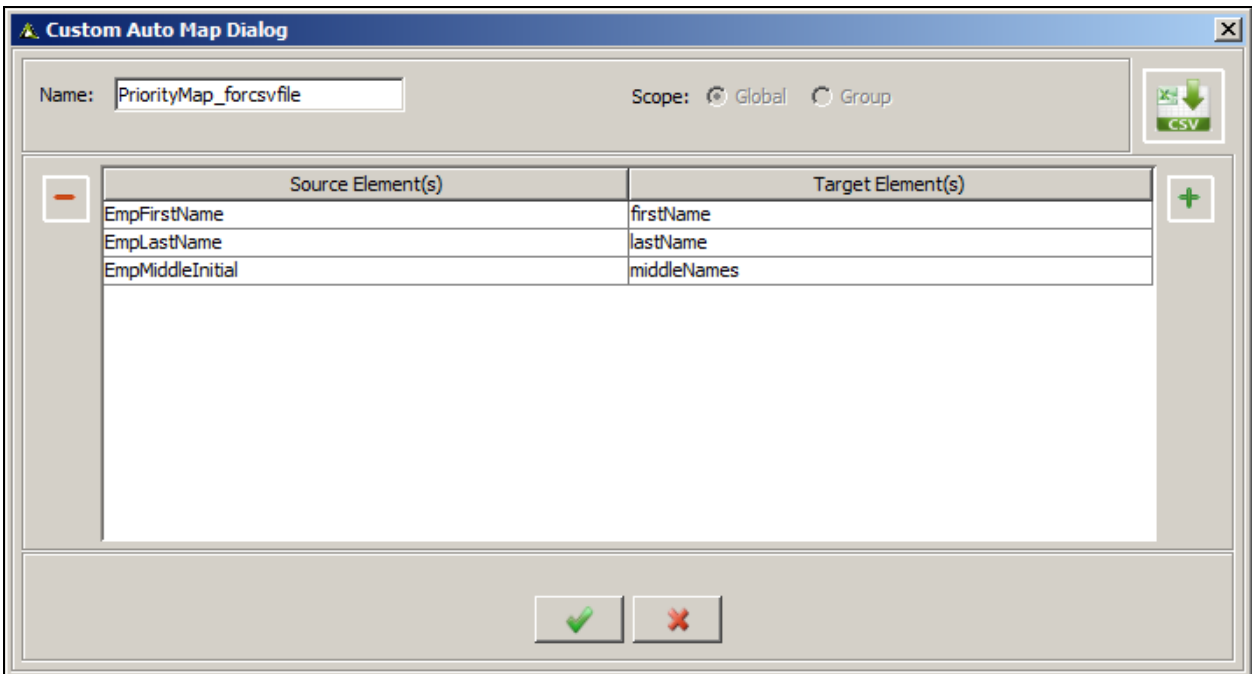
Figure 412: Custom Auto Map Dialog screen in Edit mode

3. Click the **Save & Close** button to save the Custom Auto Map.

Moving a Custom Auto Map from Group to Global

You can also change the scope of a Custom Auto Map from the Parameters Panel by moving the Custom Auto Map from **Group** to **Global**. However, you cannot move a Custom Auto Map if it is in the activated state and has been used in mapping. In addition, you cannot move a Custom Auto Map from **Global** to **Group**.

Steps to Move a Custom Auto Map

1. In the Properties Panel, select the Custom Auto Map which you want to move from group to global.

2. Right-click the **Custom Auto Map** and select the option **Move To Global** (see Figure 429).
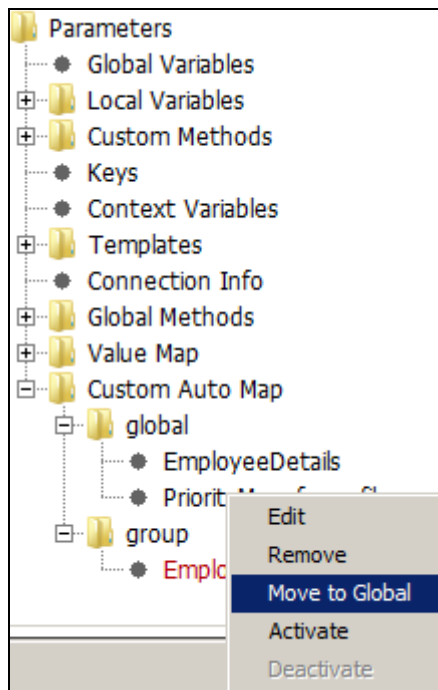
Figure 413: Parameters Panel: Move to Global option

3. A warning message is displayed (see Figure 430).
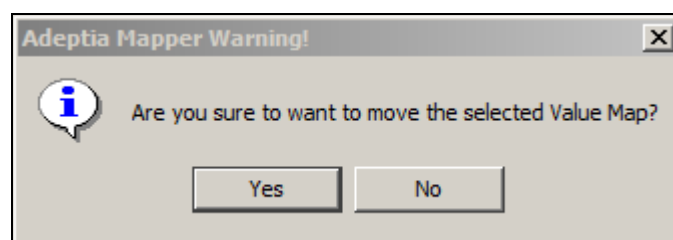
Figure 414: Warning Message

4. Click **Yes** to confirm moving the Custom Auto Map from Group to Global (see Figure 431).
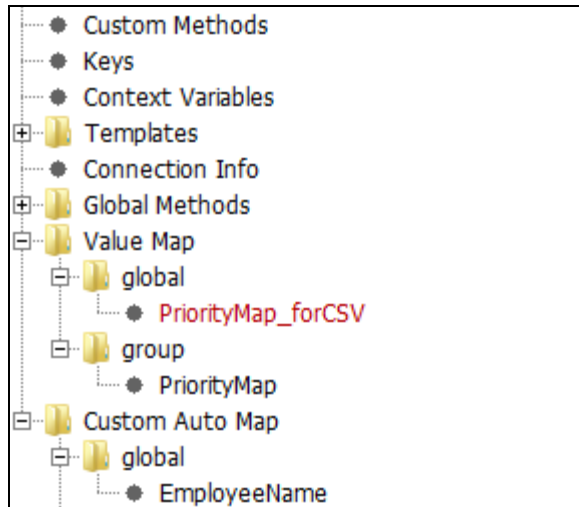
Figure 415: Change Scope in Parameters Panel

This will change the scope of the selected Custom Auto Map and now the Custom Auto Map will be displayed under the Global folder.

Deleting a Custom Auto Map

Steps to Delete a Custom Auto Map

1. In the Properties Panel, select the Custom Auto Map which you want to delete.

2. Right-click the Custom Auto Map and select the option **Remove** (see Figure 406).
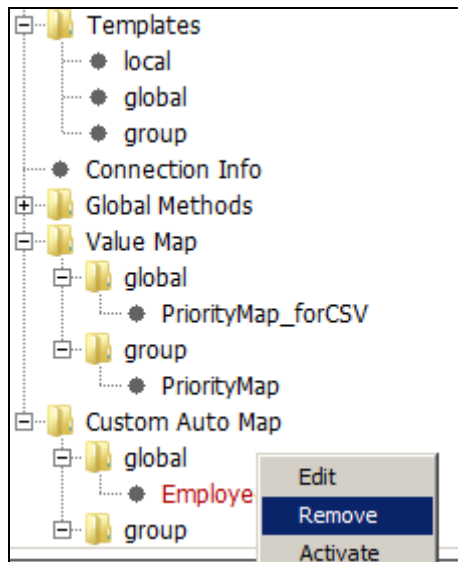
Figure 416: Parameters Panel: Custom Auto Map Remove option

A warning message is displayed (see Figure 417).
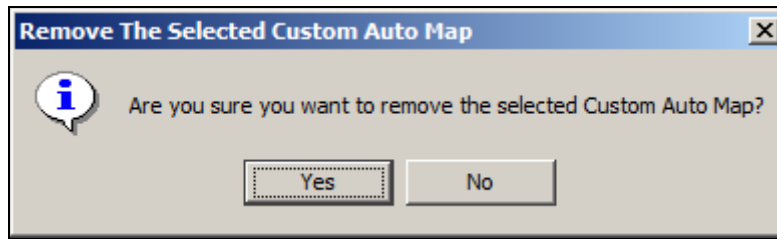
Figure 417: Parameters Panel: Custom Auto Map Status

3. Click **Yes** to confirm the deletion of selected Custom Auto Map. The selected Custom Auto Map will be deleted.

Using Value Map

The **Value Map** feature enables you to define a Map set for a particular value of an element. A Map set enables you to define the mapping values that will be used in the target schema against the values of the elements present in the source schema. For example, if you have a source schema, which has an element, Priority. This element stores the priority levels for the incoming emails and can have the values, Low, Medium, and High. You want to create a Map set for these values and want to map the values in the target schema as:

- For the source element 'High' the Map value for the target element will be 'H'.
- For the source element 'Low' the Map value for the target element will be 'L'.
- For the source element 'Medium' the Map value for the target element will be 'M'.

Scope of a Value Map

You can also select the scope of a Value Map at the time of defining and saving it. Scope of Value Map is the context within which it is defined and can be accessible within or across the user groups. A Value Map can be defined in any of the following scope:

- **Global**: The Value Maps defined within Global scope are available within all the mapping activities. Once you create a global Value Map in a mapping activity, you can use it in all the mapping activities.
- **Group**: The Value Maps Templates defined within Group scope are available only within the specific user group.

By default, a Value Map is saved in the Global scope and in the Parameter Panel; it is added and displayed under the folder **Value Map/Global**. If you select to save the Value Map in the **Group** scope then in the Parameters Panel, it is added and displayed under the folder **Value Map/Group**. You can also change the scope of a Value Map from Group to Global directly from the Parameters Panel by right-clicking the Value Map and selecting the **Move to Global** option. However, you cannot change the scope of a Value Map from Global to Group.

This section covers the following tasks:

- Defining a Value Map
- Using a Value Map in Mapping
- Managing a Value Map from the Parameters Panel

Defining a Value Map

You can define a Value Map by either manually providing the mapping values that will be used in the target schema against the values of the elements present in the source schema in the Value Map Dialog screen or by

defining the mapping values that will be used in the target schema against the values of the elements present in the source schema in a CSV file and then loading the CSV file. Loading a CSV file is useful when you have a large set of values to be mapped.

Defining a Value Map Manually

Steps to Manually Define a Value Map

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes (see Figure 418).
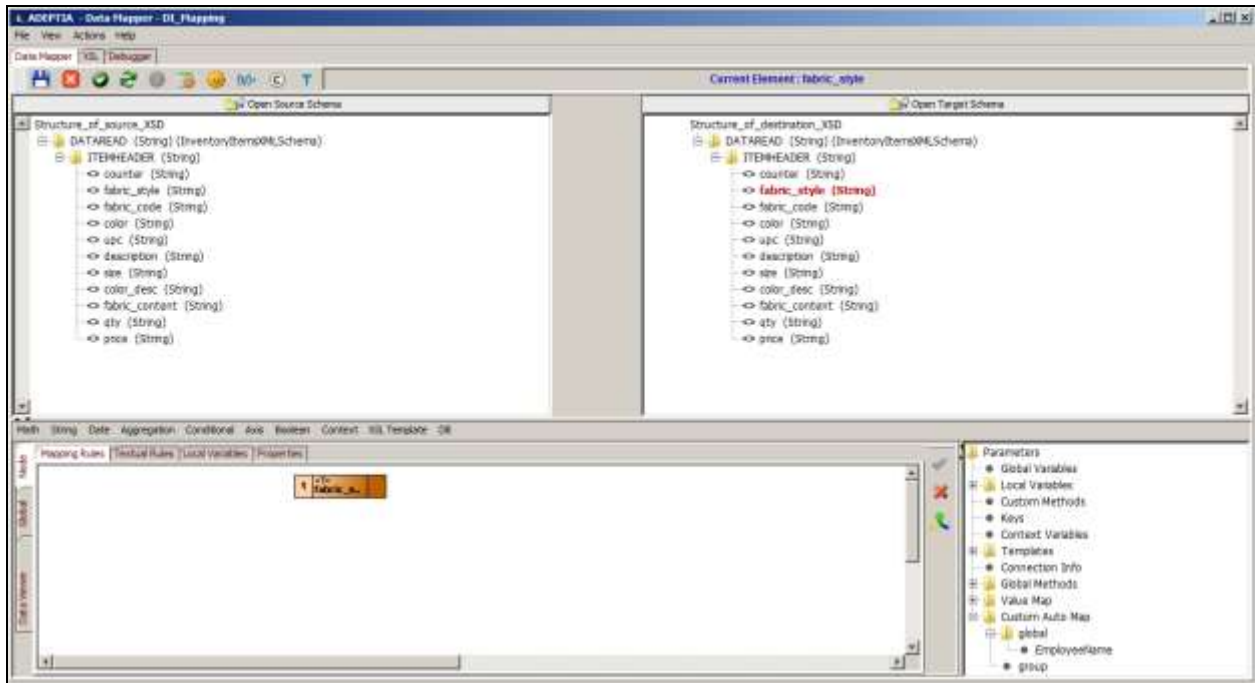
Figure 418: Elements of Source and Target Schema

2. Click the **Value Map** button on the toolbar or select the option **Value Map** from the **Actions** menu. The *Value Map Dialog* screen is displayed (see Figure 419).
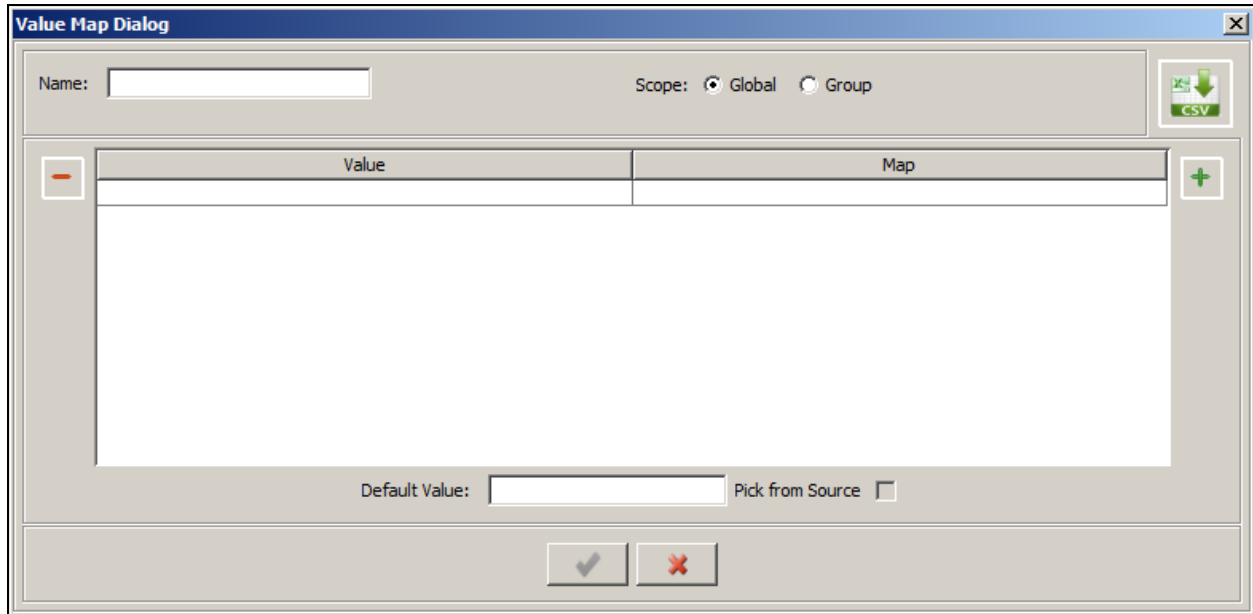
Figure 419: Value Map Options Dialog screen

3. Enter the name of Value Map (for example, **PriorityMap**) in the **Name** textbox.

4. Select the scope of the Value Map. By default, the radio button **Global** is selected and a Value Map is saved in the Global scope.

> If you want to save the Value Map within the current user group, select the **Group** radio button. This will save the Value Map as the group Value Map and can be used in any mapping activity within the current user group. In the Parameters panel, the Value Map will be displayed under the folder hierarchy Value Map/Group.

5. Enter the value (for example, *Low*) in *Value* column and enter its map value(for example, **L**) in **Map** column.

6. Click the **Add** button to add a new row for **Value** and **Map** columns. You can also add the row by pressing the **Enter** key. This will add the row immediately next to the row which is currently selected.

7. You can also provide the default Map value in the **Default Value** field (for example, *Normal*). In case if at the source side any value is not provided then the value provided in the **Default Value** field will be mapped to the target element (see Figure 420). For example, if you want to map the priority of the mail as:

- For the source element 'High' the Map value for the target element will be 'H'.
- For the source element 'Low' the Map value for the target element will be 'L'.
- For the source element 'Medium' the Map value for the target element will be 'M'.

For the source element which is not provided the target element will be mapped to 'Normal' as defined in the **Default Value** field.
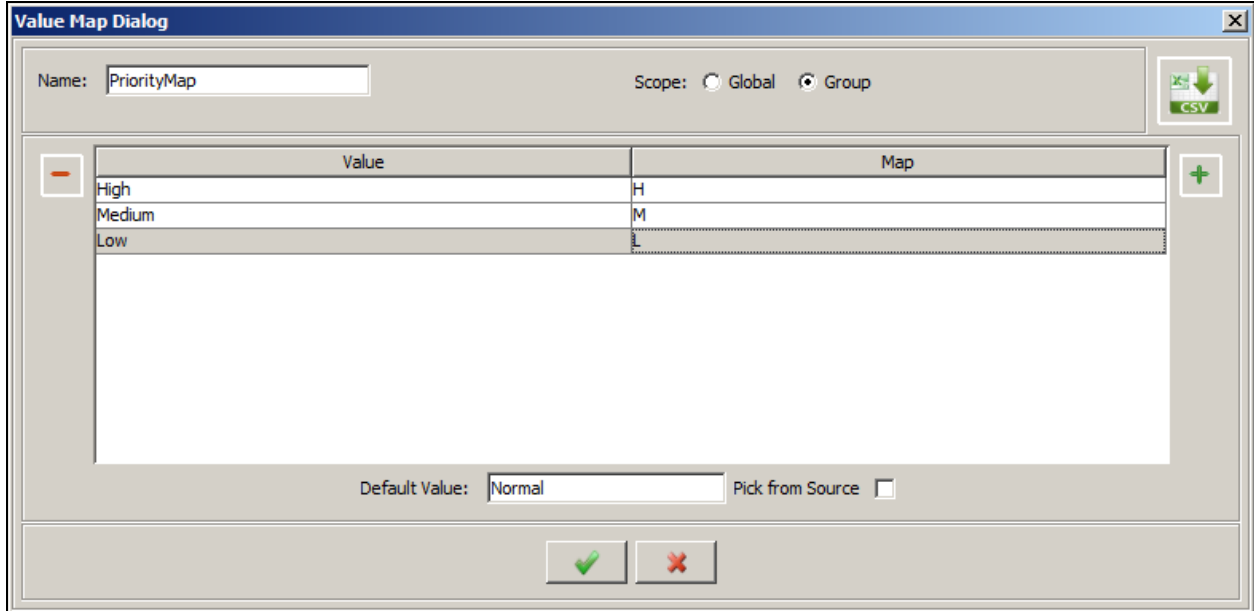
Figure 420: Value Map

8. Select the checkbox **Pick from Source** if you want to use the source element as the map value for the target element or if you do not want to use the default value as the Map value. For example, if there is a source element 'Normal' then the Map value for the corresponding target element will be 'Normal' and for the source element which is not provided the Map value for the target element will also be a blank.

> **ℹ** If you need to delete any row, select the respective row and click the **Delete** ➖ button.

9. Click the **Save & Close** ✔ button to save the Value Map. This will add the Value Map in **Value Map** hierarchy in the **Parameter Panel**. Similarly you can add more Value Map.
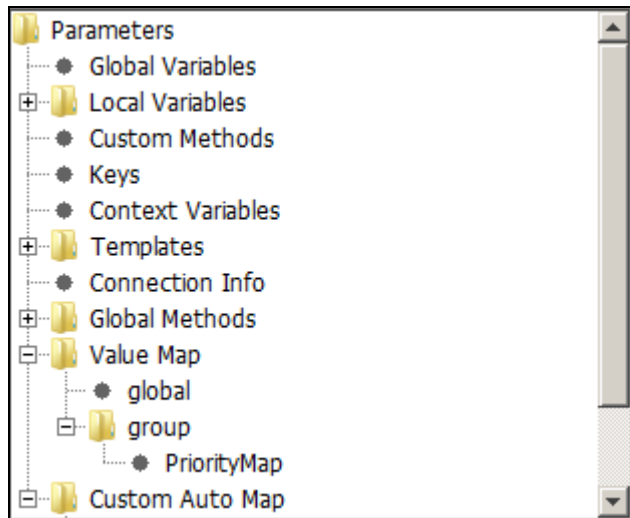
Figure 421: Parameters Panel

> If you need to close the Value Map without saving it, click the **Close** [✖] button.
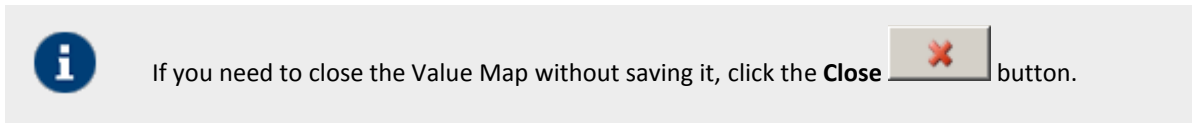
Defining a Value Map Using a CSV File

The **Value Map** feature also enables you to load a **Comma Separated Values (CSV)** file. You can use the set of values from the csv file which are separated by comma as a Map set for your process flow. For example, if you want to change the values defined for the priority of mail as:

- For the source element 'High' the Map value for the target element is 'H'.
- For the source element 'Low' the Map value for the target element is 'L'.
- For the source element 'Medium' the Map value for the target element is 'M'.

Then, you can define the set of values in a csv file as:

```
Low,L
Medium,M
High,H
```

Steps to Define a Value Map Using a CSV File

1. In the *Value Map Dialog* screen, enter the name of Value Map (for example, **PriorityMap_forcsvfile** in the **Name** textbox.

2. Click the **CSV** [CSV] button to load a **csv** file if you want to map the values using the values defined in the csv file. The server will consider the comma separated pair of values as the target element and its mapped value (see Figure 422).
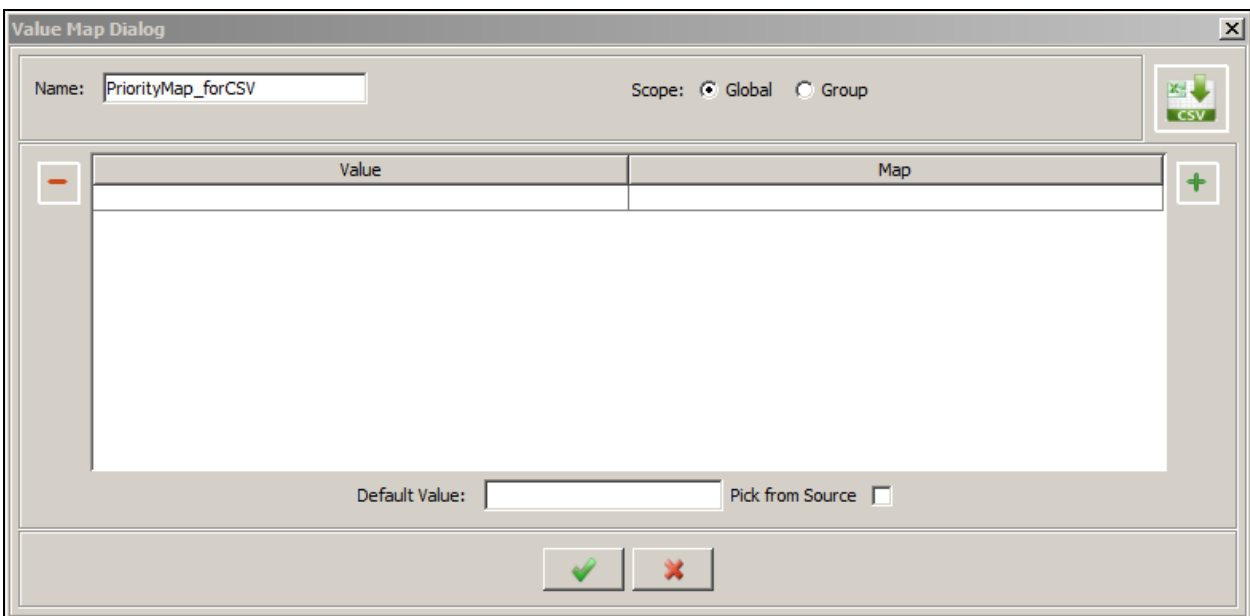
Figure 422: Value Map Dialog: Load CSV

An **Open** window is displayed.

3. Browse and select the respective csv file.

4. Click **Open** to upload the csv file. This will populate the Value and Map columns.

5. Select the scope of the Value Map.

6. Enter the default value in the **Default Value** field (see Figure 423).
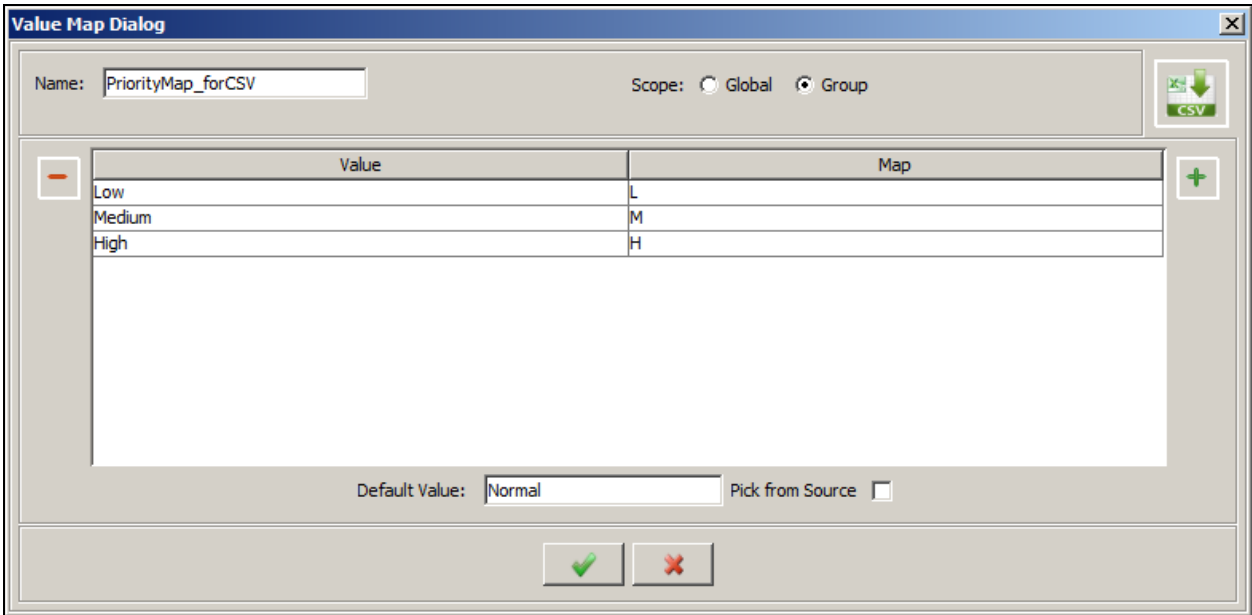
Figure 423: Value Map Dialog screen

7. Select the **Pick from Source** checkbox, if required.

8. Click the **Save & Close** button to save the Value Map. This will add the Value Map value map in **Value Map** hierarchy in the **Parameter Panel**. Similarly you can add more Value Maps (see Figure 424).
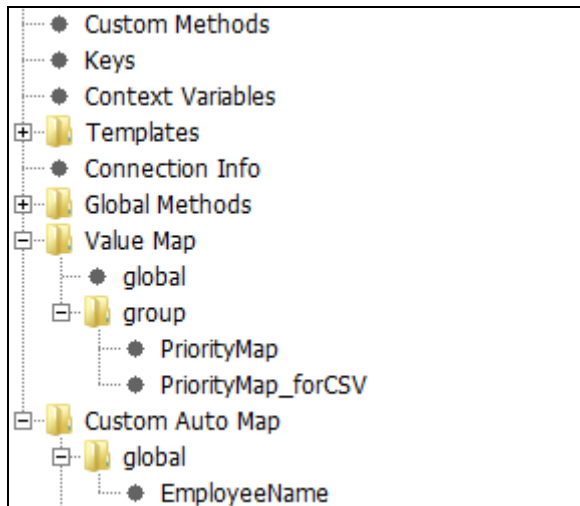
Figure 424: Parameters Panel

Using a Value Map in a Mapping

Steps to Use the Value Map in a Mapping

1. Now to map it, select a target element, for example **Priority**. The selected target element is shown in Mapping Graph Area.

2. Double click on a value map you want to use, from the **Value Map** hierarchy of **Parameter** Panel. For example, **PriorityMap**.

3. Now double-click the source element. For example, **Priority**.

4. Connect the output of the source element to input of value map and then connect the output of value map to the input of the target element (see Figure 425).
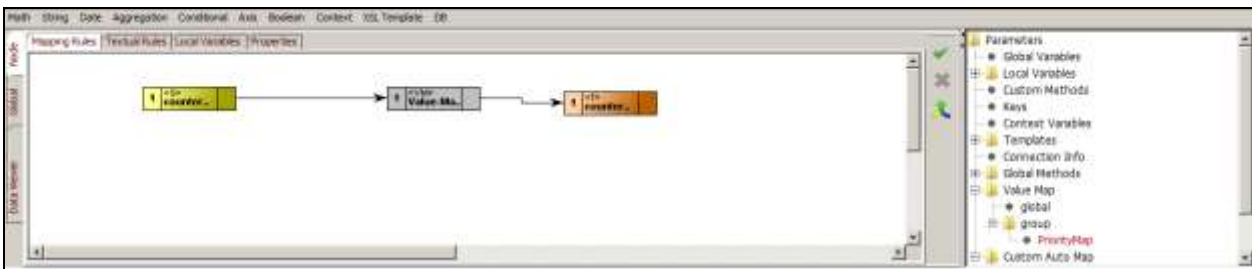
Figure 425: Use Auto Map in a Mapping

5. Once you have performed the mapping activity, click **Apply Mapping** ( ) button to save the mapping. The mapping will be applied (see Figure 426).
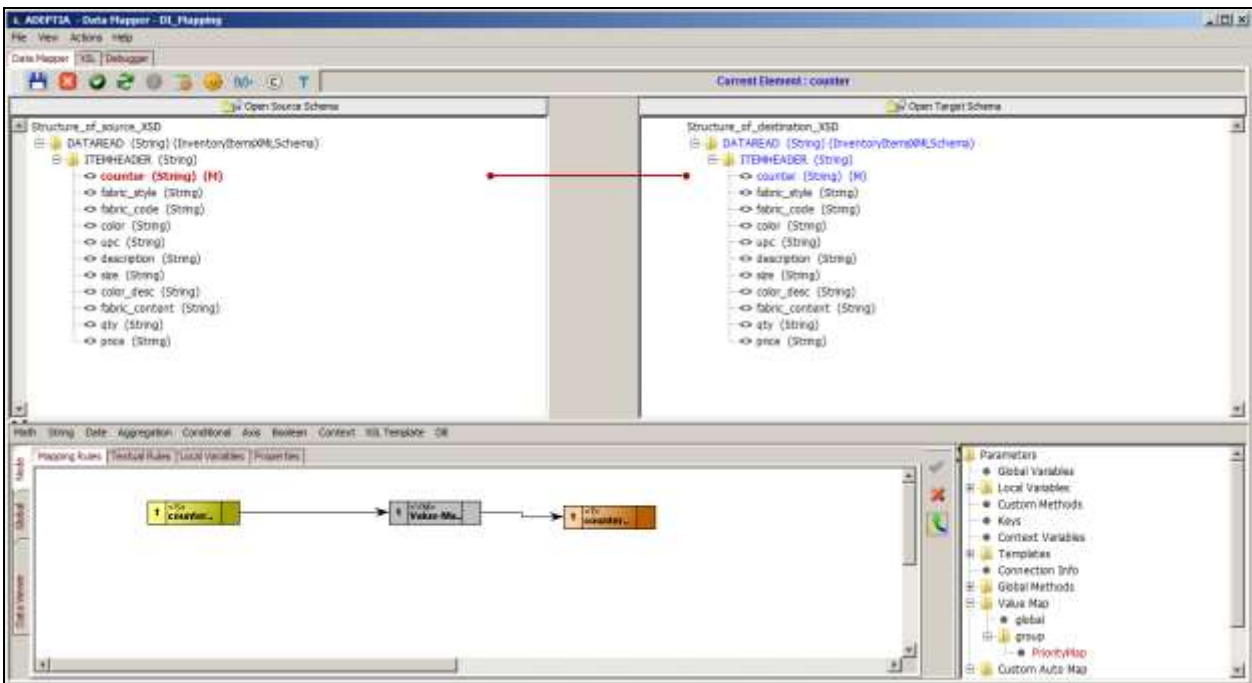
Figure 426: Mapping between the Source and Target Schema

Managing a Value Map from Parameters Panel

You can also manage the Value Map from the Parameters Panel. When you right-click the Value Map in the Parameters Panel, you can perform the following operations on a Value Map:

- Edit the Value Map
- Move a Value Map from Group to Global
- Delete a Value Auto Map

Editing a Value Map

In edit mode, you can edit the name of Value Map and the map set for an element value. Note that you cannot edit the scope of a Value Map in edit mode. The radio buttons to select the scope becomes non-editable once you save the Value Map. The radio buttons to select the scope becomes non-editable once you save the Value Map. However, you cannot edit the Value Map when it has been already been used in the mapping and that mapping has been saved.

Steps to Edit a Value Map

1. In the Properties Panel, select the Value Map to be edited.

2. Right-click the Value Map and select the option **Edit** (see Figure 406).
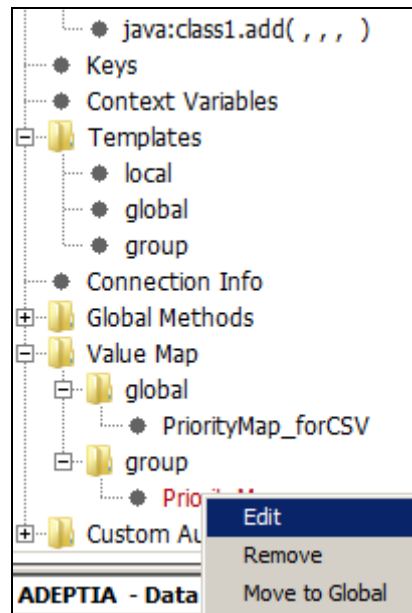
Figure 427: Parameters Panel: Value Map Edit option

The Value Map is open in **Edit** mode (see Figure 412).
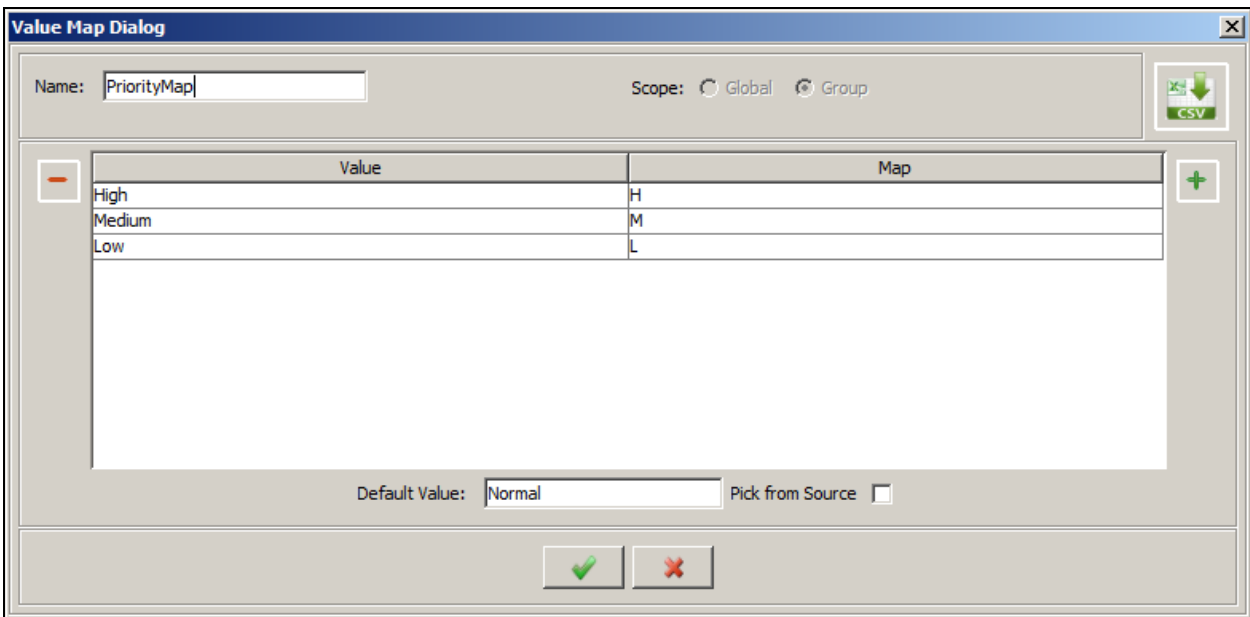
Figure 428: Value Map Dialog screen in Edit mode

3.	Click the **Save & Close** button to save the Value Map.

Moving a Value Map from Group to Global

You can also change the scope of a Value Map from the Parameters Panel by moving the Value Map from **Group** to **Global**. However, you cannot move a Value Map if it is has been used in mapping and that mapping has been saved. In addition, you cannot move a Custom Auto Map from **Global** to **Group**.

Steps to Move a Value Map

1.	In the Properties Panel, select the Value Map which you want to move from group to global.

2.	Right-click the **Value Map** and select the option **Move To Global** (see Figure 429).
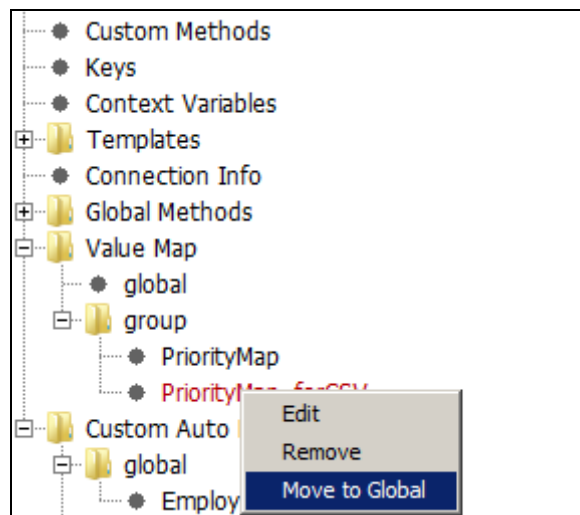
Figure 429: Change Scope in Parameters Panel

3. A warning message is displayed (see Figure 430).
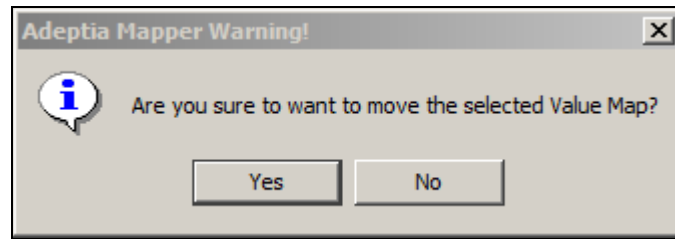
Figure 430: Warning Message

4. Click **Yes** to confirm the change of scope from Group to Global (see Figure 431).
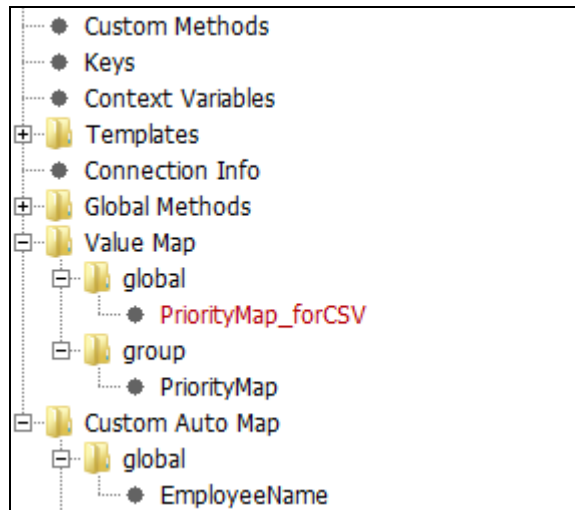
Figure 431: Change Scope in Parameters Panel

This will add the change the scope of the selected Value Map and now the Value Map will be displayed under the Global folder.

Steps to Delete a Value Map

1. In the Properties Panel, select the Value Map which you want to delete.

2. Right-click the Value Map and select the option **Remove** (see Figure 406).
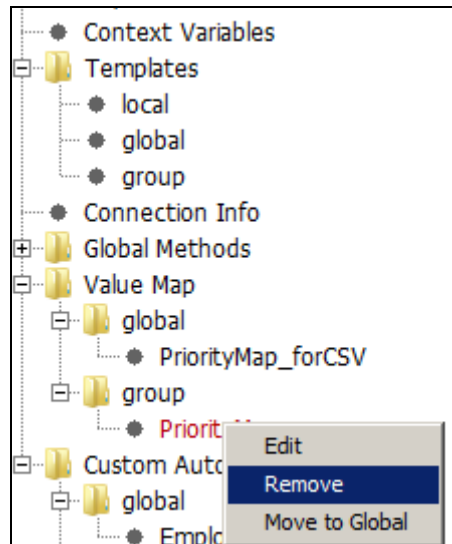
Figure 432: Parameters Panel: Value Map Remove option

A warning message is displayed (see Figure 417).
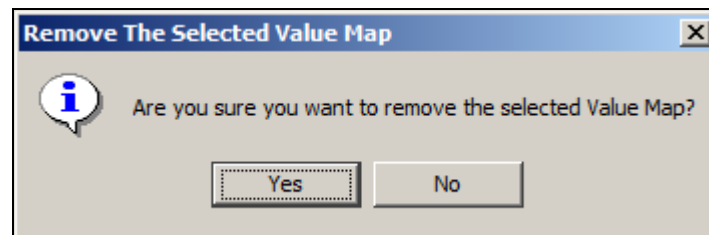
Figure 433: Application Message

3. Click **Yes** to confirm the deletion of selected Value Map. The selected Value Map will be deleted.

Copy/Paste Mapping

This is an additional feature of mapping elements. You can copy the mapping associated with a target element and paste it on other target elements.

Steps to copy the mapping of a target element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes. Additionally, a source and target element should be mapped.

2. Right-click the target element whose mapping you want to copy and select the **Copy Mapping** option. This copies the mapping of the selected target element.

Steps to paste the mapping on a target element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes. Additionally, the mapping of a target element should be copied.

2. Right-click the target element on which you want to paste the mapping and select the **Paste Mapping** option.

The **Paste Mapping Options** screen is displayed with a list of Paste options (see Figure 434).
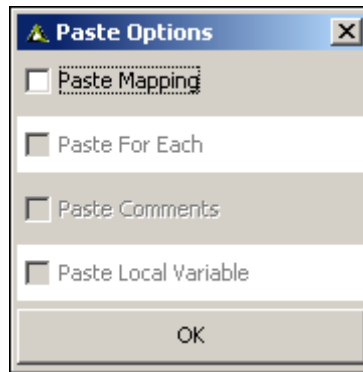
Figure 434: Paste Mapping Options

3. This screen displays a list of options that can be pasted with the mapping. It includes the **For Each** and **Comments** properties and local variables.

> ℹ The **Paste Mapping** option is always enabled. The other options are enabled only if they have been defined for the copied element.

4. Select the checkbox(s) of options you want to paste with the mapping, and click **OK**. The mapping with the selected options is pasted on the target element.

> ℹ If local variables are pasted for a target element, they are not overwritten, but are added to the existing local variables of that target element.

> ℹ You can also copy a mapping instance and paste it onto another instance. This is possible only if the schemas are same in both the mapping instances.

Import Mapping

If you want to map elements in a pattern that is similar to an existing mapping, you can import the existing mapping.

Steps to import an existing mapping to a new mapping

1. Ensure that the <u>source and target schemas are loaded</u>and all their elements are listed under their respective nodes. (see Figure 435).
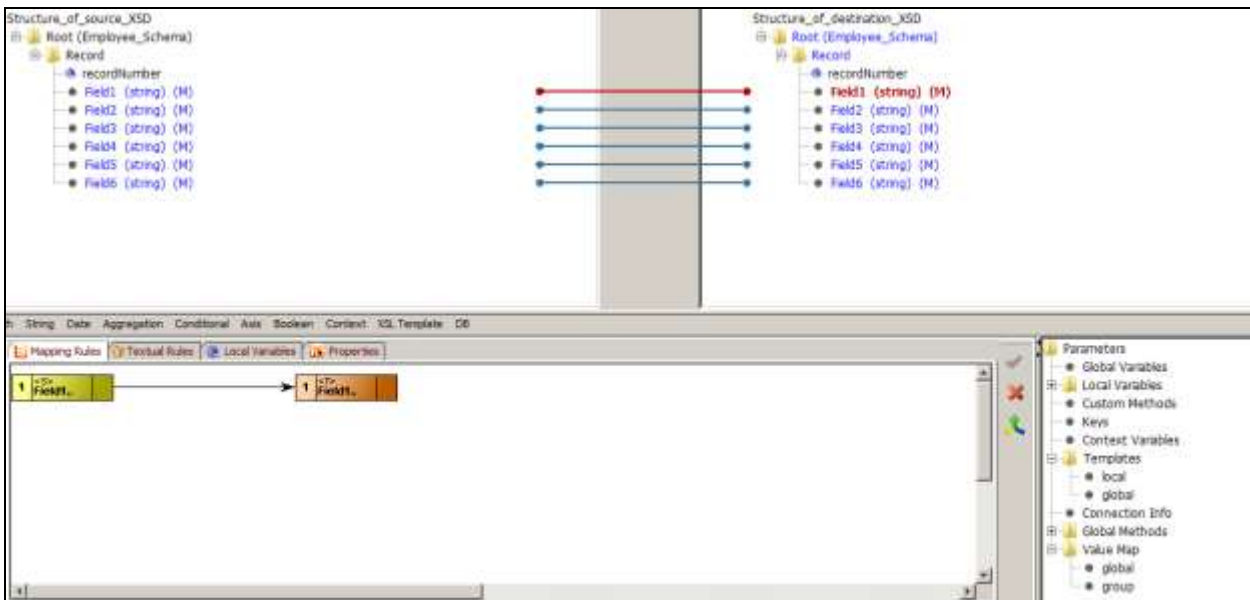
Figure 435: Elements of Source and Target Schema

2.   Click **Actions** menu and select **Import Mapping** (see Figure 436).
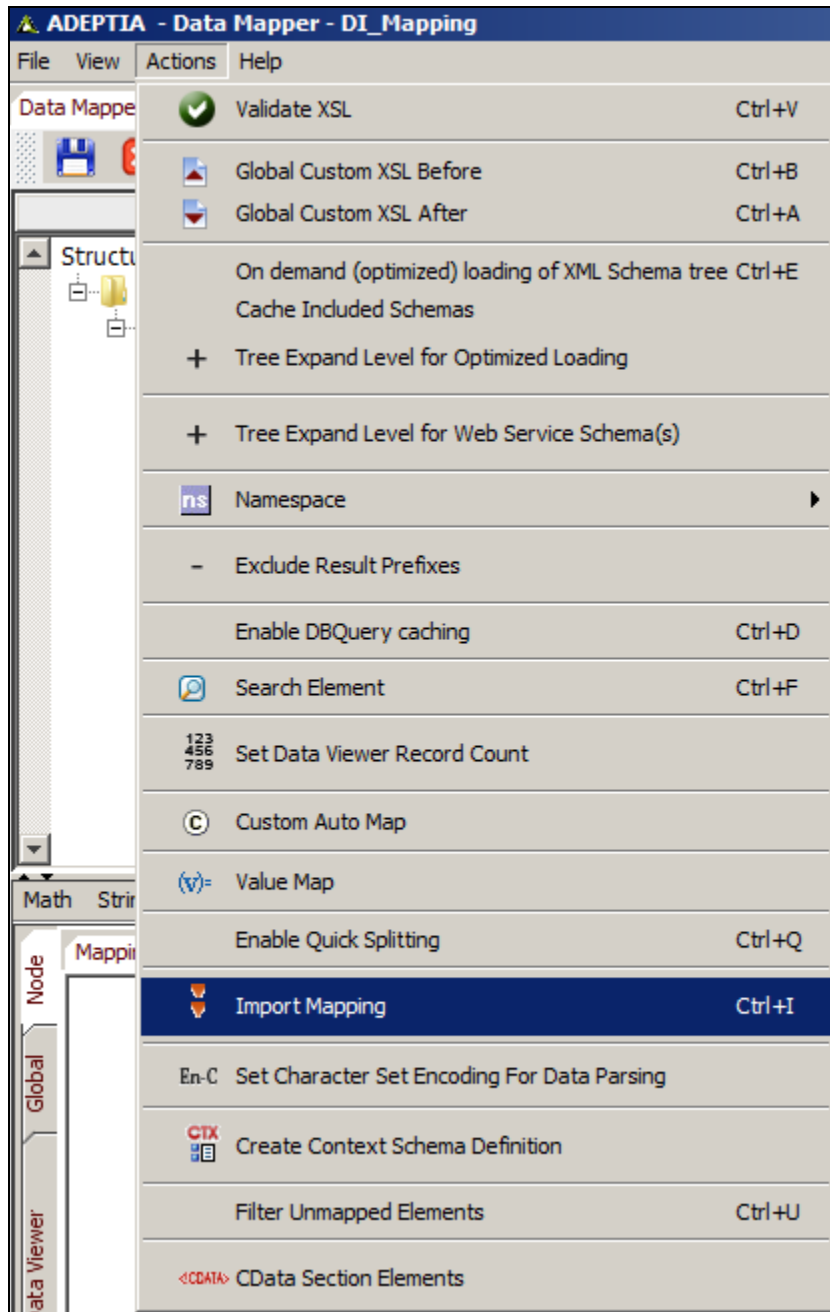
Figure 436: Select Import Mapping Option

The *Import Mapping Dialog* screen is displayed (see Figure 437).

Figure 437: Import Mapping Dialog

3. Select the mapping you want to import and click **Load**. This imports the mapping of the selected schemas to the new schemas (see Figure 438).
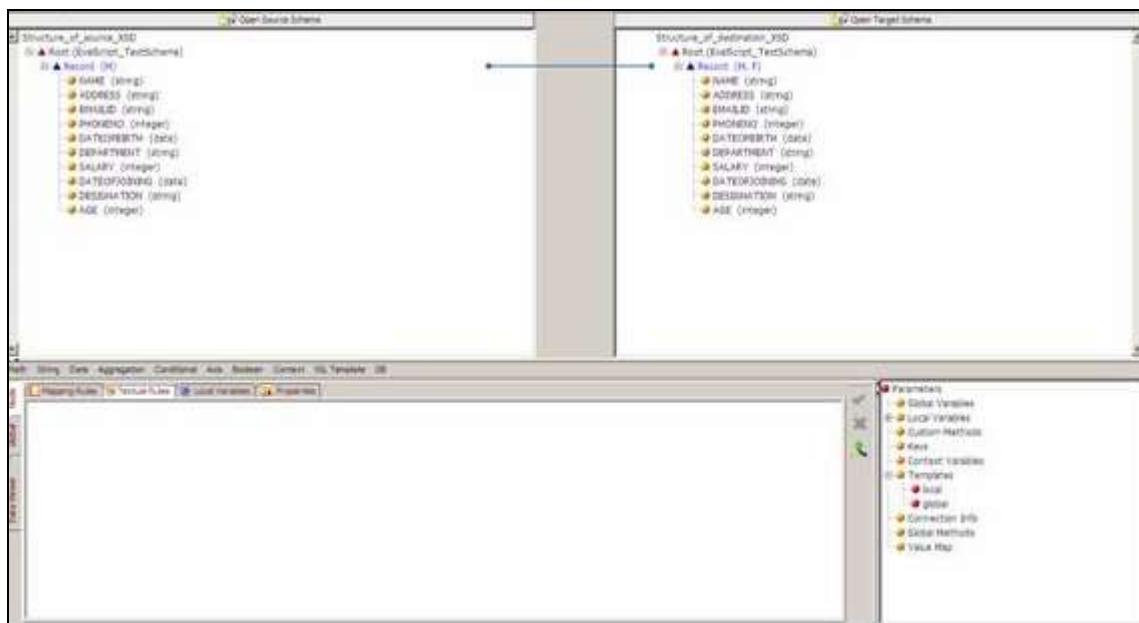
Figure 438: Mapping Imported

Mapping Functions

You can use the mapping functions built-in the Data Mapper to map source schema elements to the target schema elements. These mapping functions are listed as:

- Math
- String
- Date
- Aggregation
- Conditional
- Axis
- Boolean

- Context
- DB

All these mapping functions comprise of sub-functions using which you can map elements.

Steps to map elements using Mapping Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click a target element. The target element node is displayed in the Mapping Graph Area (see Figure 439).
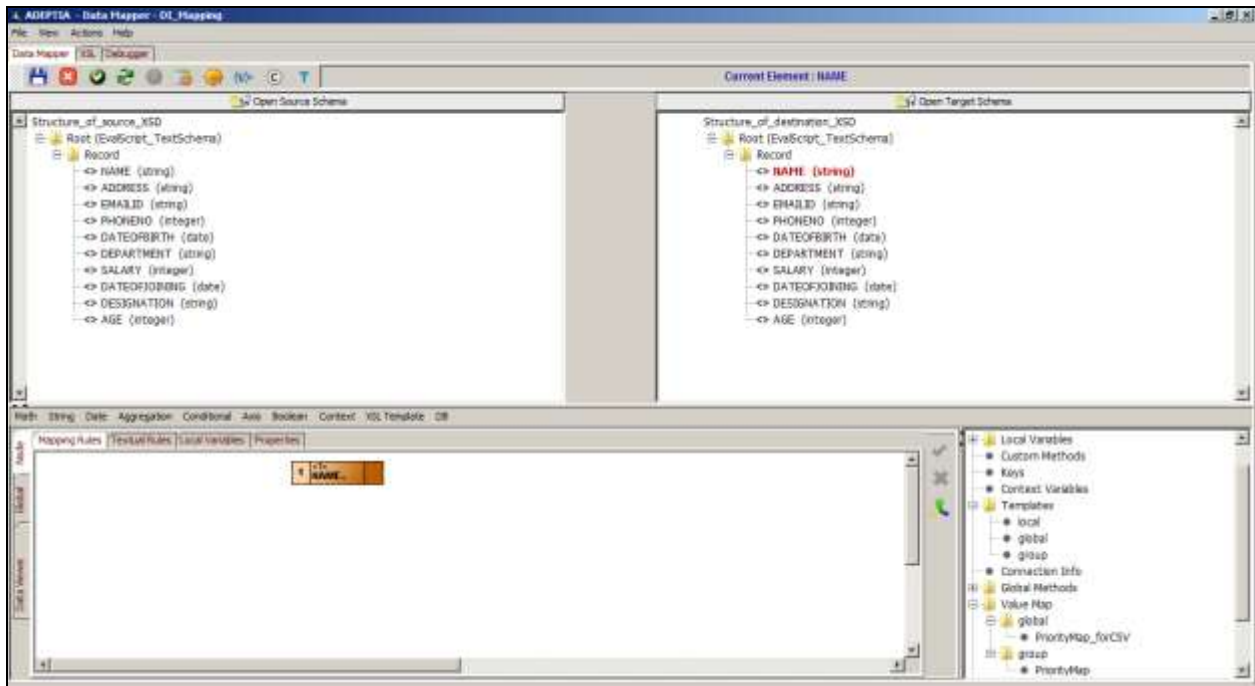
Figure 439: Select Target Element

3. Double-click a source element. The source element is displayed in the **Mapping Graph Area** (see Figure 440).
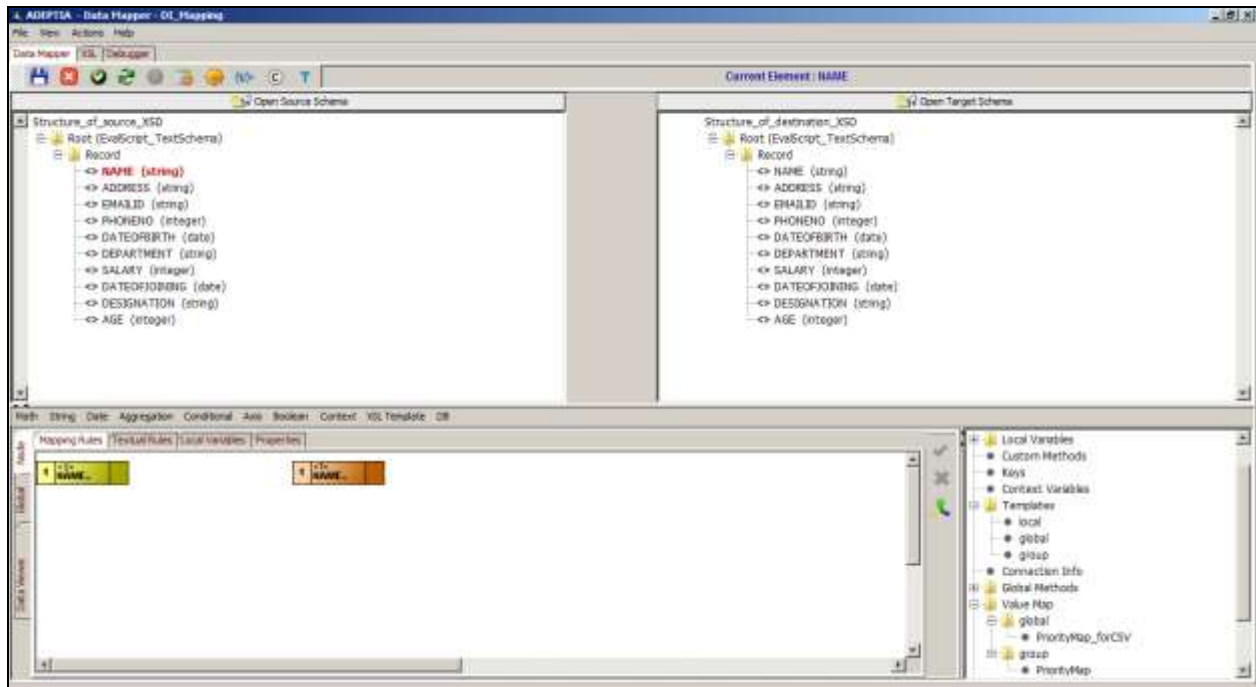
Figure 440: Select Source Element

> **i** You can double-click more source elements if required. This will display the selected source elements in the Mapping Graph Area (see Figure 441).
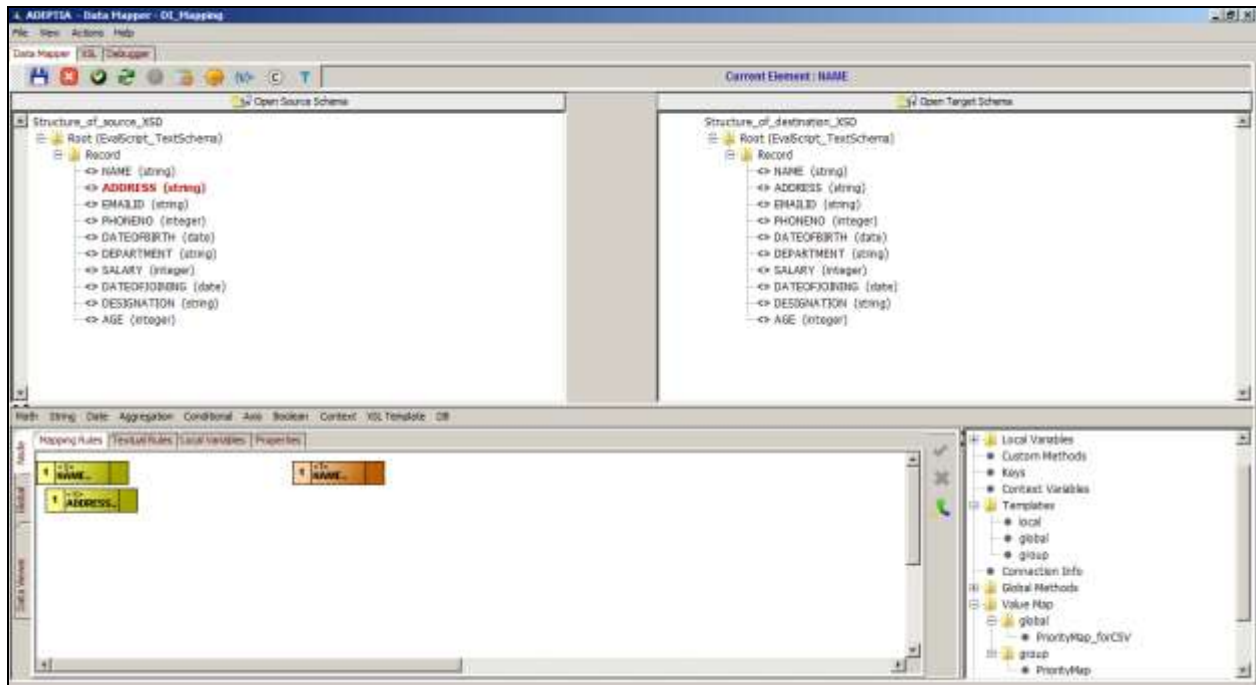
Figure 441: Select Second Source Element

4. Click the desired mapping function. This displays a list of sub-functions associated with the selected mapping function.

5. Select the desired sub-function and use it to map the displayed source and target elements.

6. Once you have performed the mapping activity, click **Apply Mapping** ( ) button to save the mapping.

> Once you have mapped source and target elements, you can view and validate the generated mapping XSL, from the Data Mapper screen. You can also view the target XML and view and validate mapping output from this screen.

For details on using these mapping functions, refer to the section Using Mapping Functions.

While mapping elements, certain suffixes are displayed next to source and target elements in the Source and Target Panels. These suffixes are explained in the table below.

Table 8: Suffixes of Source and Target Elements

Suffix	Description
(C)	Target element can be cloned to create another target element.
(CM)	Comments have been added for the target element.
(F)	For Each property has been applied for the target element.
(LV)	A local variable has been declared to the target element.

> More than one suffix can be displayed next to a source and target element.

Save Mapping and Exit Data Mapper

Once you have mapped source and target elements, you can save the mapping and exit the Data Mapper.

Steps to save the mapping and exit the Data Mapper

1. Click the **File** menu and select **Save** to save the mapping. Alternately, you can click the **Save** ( ) button on the toolbar. The server first validates the mapping activity. If successful, it displays a dialog box confirming that the mapping has been saved successfully. If the **Comments** property is enabled, then clicking **Save** will display a screen where you need to enter comments related to the mapping. (see Figure 442).
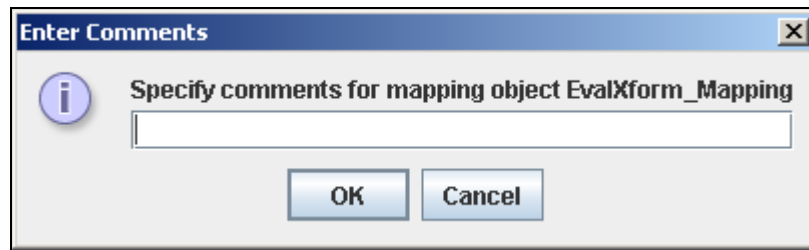
Figure 442: Add Comments (Mapping)

2. Enter comments in the textbox **Specify comments for mapping object<object name>**.

> **i** The comment should be at least 1 character in length.
>
> If you enable/disable the *Comments* property in the middle of a mapping activity, you need to restart the mapping applet.

3. Click **OK** to save the comments. This displays a dialog box confirming that the mapping has been saved successfully.

4. Click **File** menu and select **Exit** to close the Data Mapper applet. A confirmation dialog box is displayed (see Figure 443).
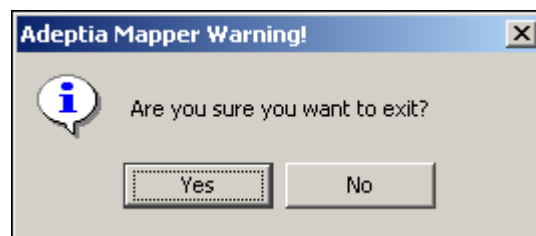
Figure 443: Exit from Data Mapper

5. Click the **Yes** button to exit the Data Mapper screen and return to the **Manage Data Mapping** screen. If the mapping object has not been saved, then the Save Mapping Object dialog box is displayed (see Figure 444).
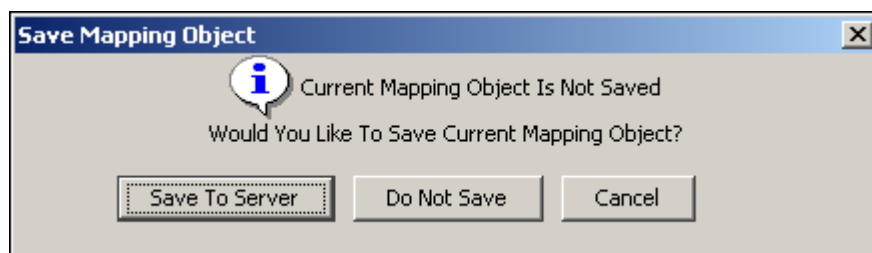
Figure 444: Save Mapping Object

6. Click the **Save To Server** button to save the mapping object to the Adeptia Suite. A screen is displayed where you need to enter comments related to the mapping. (refer to Figure 442).

7. Enter comments in the **Specify comments for mapping object <object name>** field.

8. Click **OK** to save the comments. This displays a confirmation dialog box stating that the mapping has been saved successfully. The control returns to the **Manage Data Mapping** screen, where a list of mapping activities is displayed.

9. Refresh the Internet browser to view the saved mapping activity.

> **i** You can *view and validate the generated mapping XSL*, *view the mapping XML* and *view and validate mapping output*, before saving the mapping activity.

> ℹ️ At times, on saving a mapping activity, the memory usage may exceed its actual capacity depending on the JVM and the operating system.

View and Validate Generated Mapping XSL

This is a very useful feature of the Data Mapper. It enables you to validate and test the generated XSL before saving the mapping activity.

Steps to view and validate the generated mapping XSL

1. Click the **XSL** tab on the Tabs Panel to view the generated mapping XSL. The generated XSL code with line numbers is displayed (see Figure 445).

Figure 445: Mapping XSL

2. Click the **Action** menu and select **Validate XSL** option to validate the generated XSL. A dialog box is displayed confirming that the XSL is valid.

> ℹ️ If generated XSL is invalid, then an error is displayed as a selected line. Error details are displayed in the XSL Errors Pane. It displays one error at a time.

3. Click **OK** to close the above dialog box.

> ℹ️ You can also validate the generated XSL from the Create Data Mapping screen. For more details, refer to the section Splitting Source Data.

View Mapping XML

The Data Mapper allows you to view the generated XML code, before saving the mapping activity.

Steps to view Mapping XML

1. Click the **View** menu and select **View Mapping XML** option. This displays the generated XML code with line numbers, in read-only mode (see Figure 446).

Figure 446: View Mapping XML

View and Validate Mapping Output

Once you have mapped source and target schema elements, you can view and validate the output of the mapping activity. This feature enables you to test the data and make modifications to the mapping activity, before saving it.

Steps to view and validate mapping output

1. Click the **Debugger** tab on the tabs panel to view and validate the output of the mapping activity. The Debugger is displayed on the *Data Mapper* screen (see Figure 447).
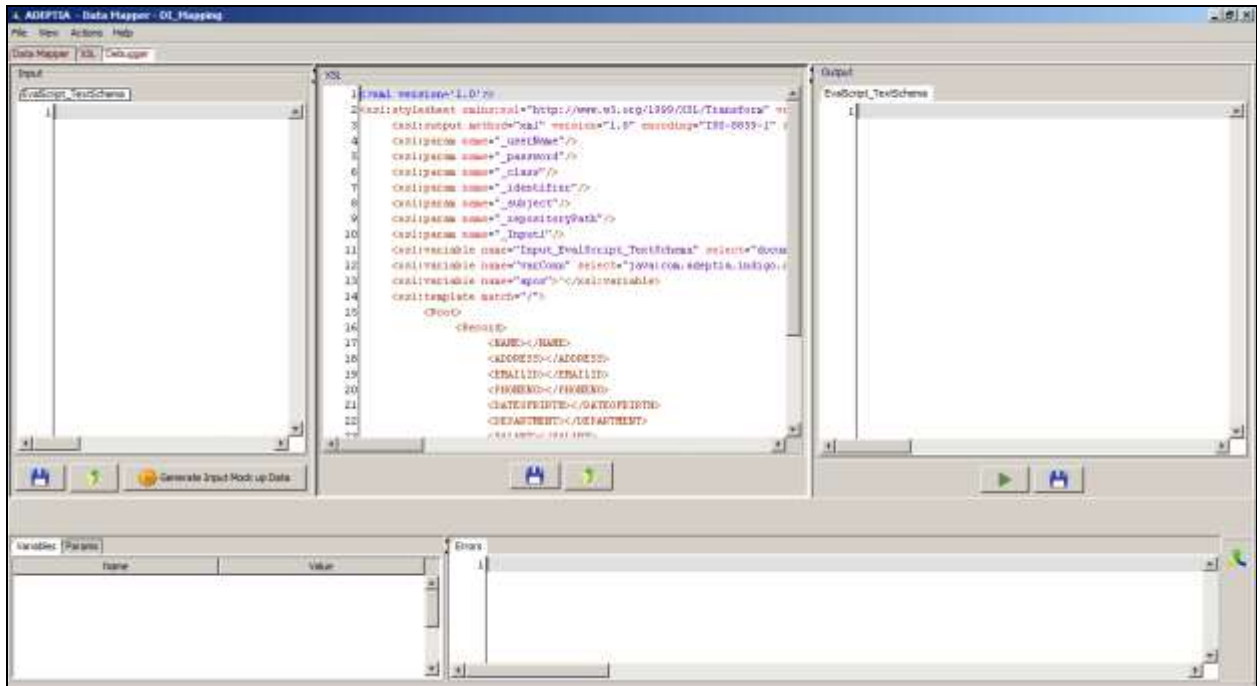
Figure 447: Debugger screen

This screen is divided into five sections as listed in the table below.

Table 9 : Options of the Debugger Screen

Suffix	Description
Input	Displays data for all input schemas in XML format. This data can be mockup data or a selected XML file.
XSL	Displays the generated XSL. You can generate sample output data based on the input data.
Output	Displays the generated output data for all schemas.
Variables/ Params	This section comprises of two tabs:
	Variables
	Params
	The Variables tab displays the local variables that are encountered in the generated XSL.
	The Params tab displays all parameters that are defined for a XSL template. These parameters are displayed only if that XSL template is used in the mapping activity.

Suffix	Description
Errors	Displays all errors encountered during debugging.

2. Click the **Generate Input Mock up Data** button displayed in the **Input** section, to generate the sample input data in XML format. The sample input data contains name of the element as XML Tags and some randomly generated values as their data. The sample input XML file is displayed in the **Input** section (see Figure 448).
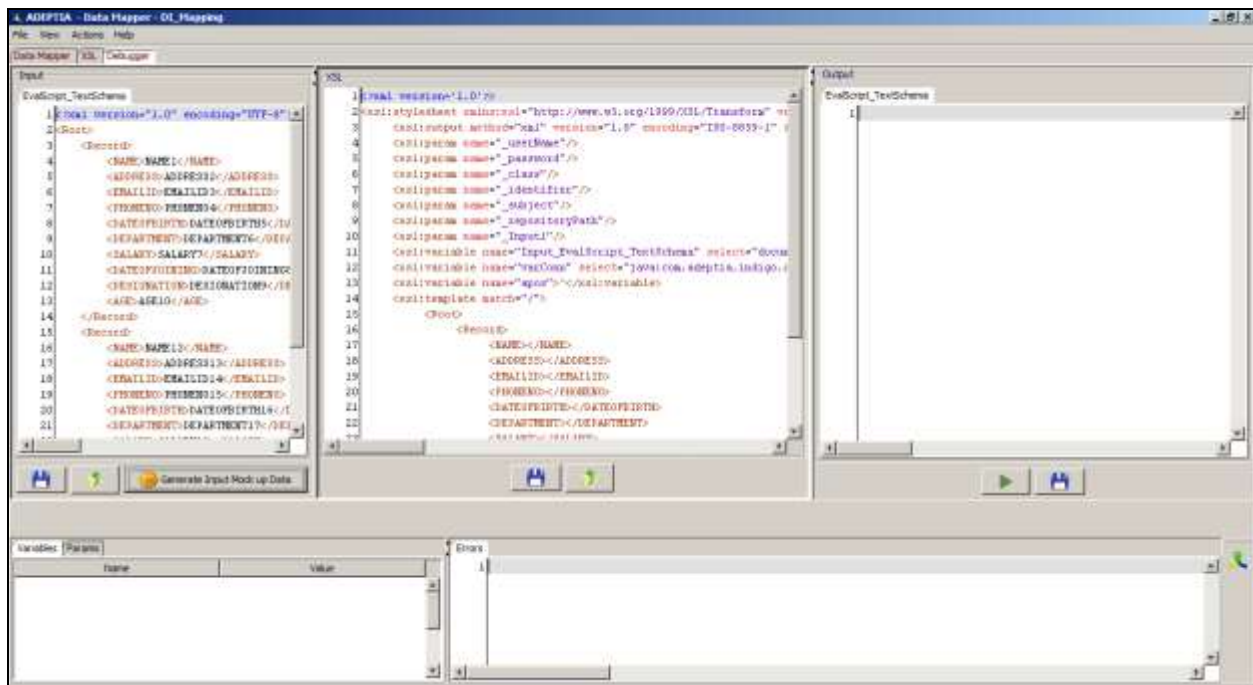
Figure 448: Generate Mockup Data

> ℹ️ Data will be generated for all input schemas.

3. Alternately, you can attach a source file to the root element of the source schema. Right-click the root element of the source schema and select **Attach Source** from the dropdown list. Select the source file to attach it. This automatically converts the actual data of the source file into XML input data, which can be validated.

4. Alternately, you can display input data from an existing XML file. Click **Load Input XML** button (   ) displayed in the Input section to select and upload the existing XML file.

> ℹ️ Another way of uploading the XML file is right-clicking the *Input* section and clicking the **Load** option.
>
> If you load an XML file, then the existing XML code is overwritten. It is not appended.

5. Click the **Save** button (   ) displayed in the Input section to save the generated input data.

> **ℹ** You can simulate the mapping either on the desktop or on the server. By default, simulation is done on the desktop. Simulating on the server supports global functions, custom methods, Context Variable, Set Context, Get Context and the DBlookup () functions. However, it can be used only in case of mapping of single source and target elements.
>
> While simulating on the server using context variables, if you assign a value to the context variable using the Set Context function and retrieve its value using the Get Context function, it will return the default value of the context variable, instead of the new value assigned. For example, a context variable 'Var1' has the default value as 10 and is later assigned the value of 20 by Set Context function. When the Get Context function is used to retrieve the value of the variable, it returns 10 instead of 20.

6. Select the radio button **Run on Server** if you want to simulate the mapping activity on the server.

7. Click the **Start Execution** button displayed in the **Output** section to generate sample output data based on input data. The generated sample output data is displayed in the **Output** section (see Figure 449).
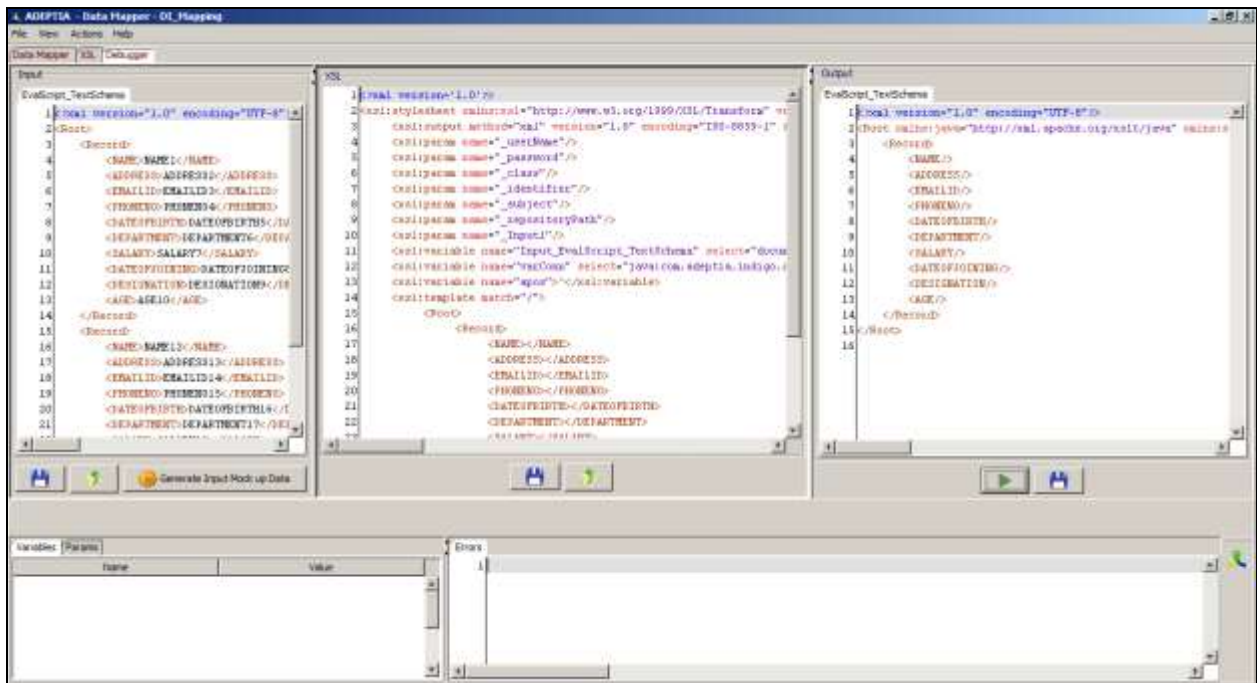
Figure 449: Output XSL

> **ℹ** You can stop the generation of output data at any time by clicking the **Stop** button displayed in the XSL section.
>
> In case XML Schema is used at target end, then unmapped elements are filtered out automatically.

8. Click the **Save** button ( ) displayed in the Output section to save the generated mapping output.

9. A dialog box is displayed using which you can save the XML file at the desired location.

Using Data Viewer

Data Viewer is an advanced feature of Data Mapper which is used to view actual input and output data after applying mapping rules. In data viewer, you can upload actual input file and view the actual output. It also displays error records (if any). Additionally, it also validates the enumerated values and displays the list of enumerated literals for the target element in case XML Schema is used at target.

Data Viewer is helpful if you want to know what will be the output of the mapper. In this case you need not to execute the process flow. You can simply upload the source file and view input and output record.

In data viewer, records are displayed in Grid View as well as Tree View. Table 10 lists the schemas, whose records can be displayed in data viewer.

Table 10: List of schema whose records can be shown in Data Viewer

Schema	Tree View	Grid View
Adv. Text Schema	✓	X
Excel Schema	✓	✓
Hierarchical Excel Schema	✓	X
Text Schema	✓	✓
XML Schema	✓	X
Adv. Positional Schema	✓	X
Positional Schema	✓	✓

Steps to use Data Viewer

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Map source and target elements and apply the mapping rule as per your need.

3. To use Data Viewer, click the **Data Viewer** tab. The **Data Viewer** panel is displayed (see Figure 450).
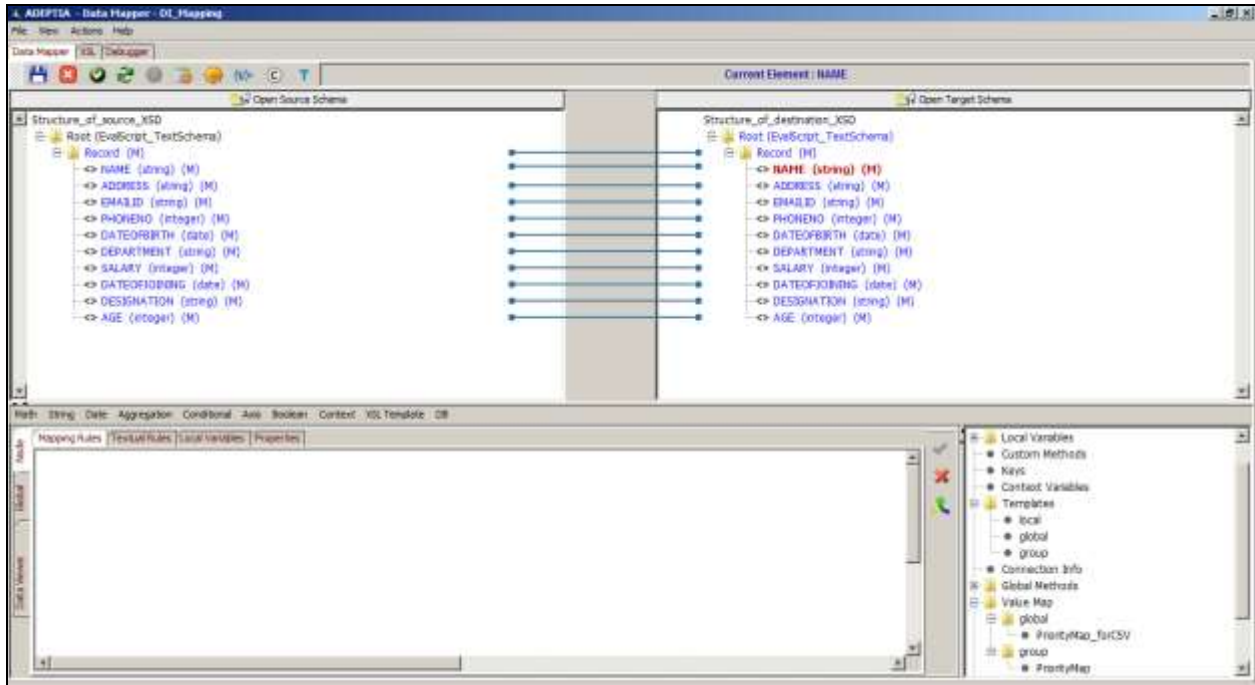
Figure 450: Data Viewer

4. To attach the source file, right click the **Root** element in the Source Panel and select **Attach Source** option and select the source file (see Figure 451).
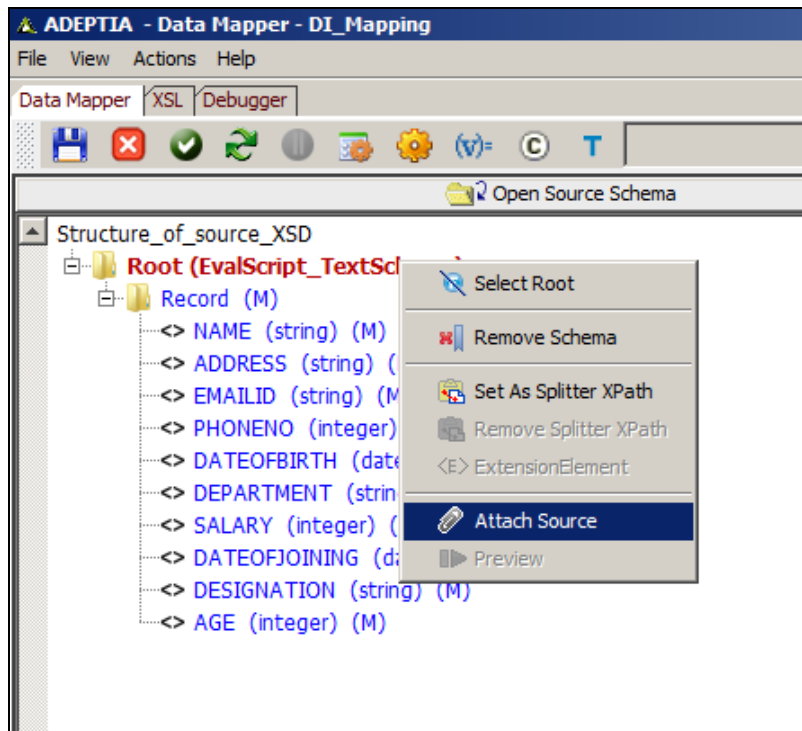
Figure 451: Attach Source

5. After selecting the source file, again right click the **Root** element in source panel and select **Preview**. Source Data is displayed in the **Grid View** panel (see Figure 452).
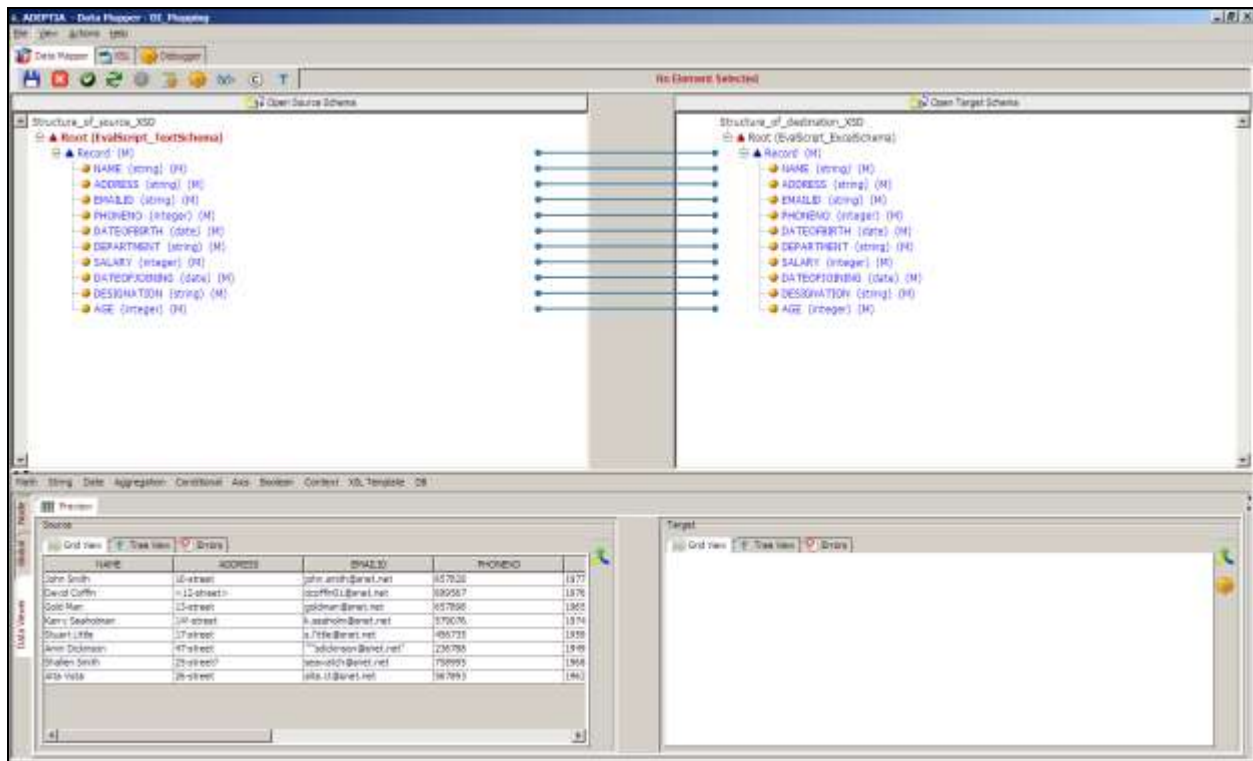
Figure 452: Source records in Grid View

> ℹ️ By default maximum 50 records are displayed in the Data Viewer. To view more records, click **Action** menu and select **Set Data Viewer Record Count** and enter the desired value. When you change this value, you need re-attach the source.

6. If there is any error record in the source file, a pop-up message is displayed that *"Error Records found in the source data."* (see Figure 453).
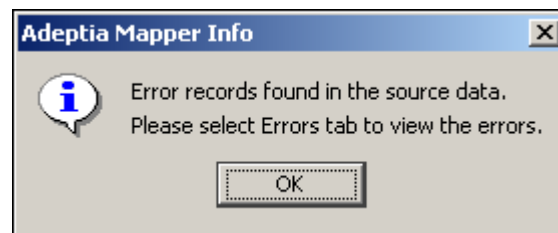
Figure 453: Pop-up message

7. Click **OK** to close this pop-up message.

8.   To view the source data in *Tree View,* click the **Tree View** tab. The source data is selected in the hierarchy view (see Figure 454).
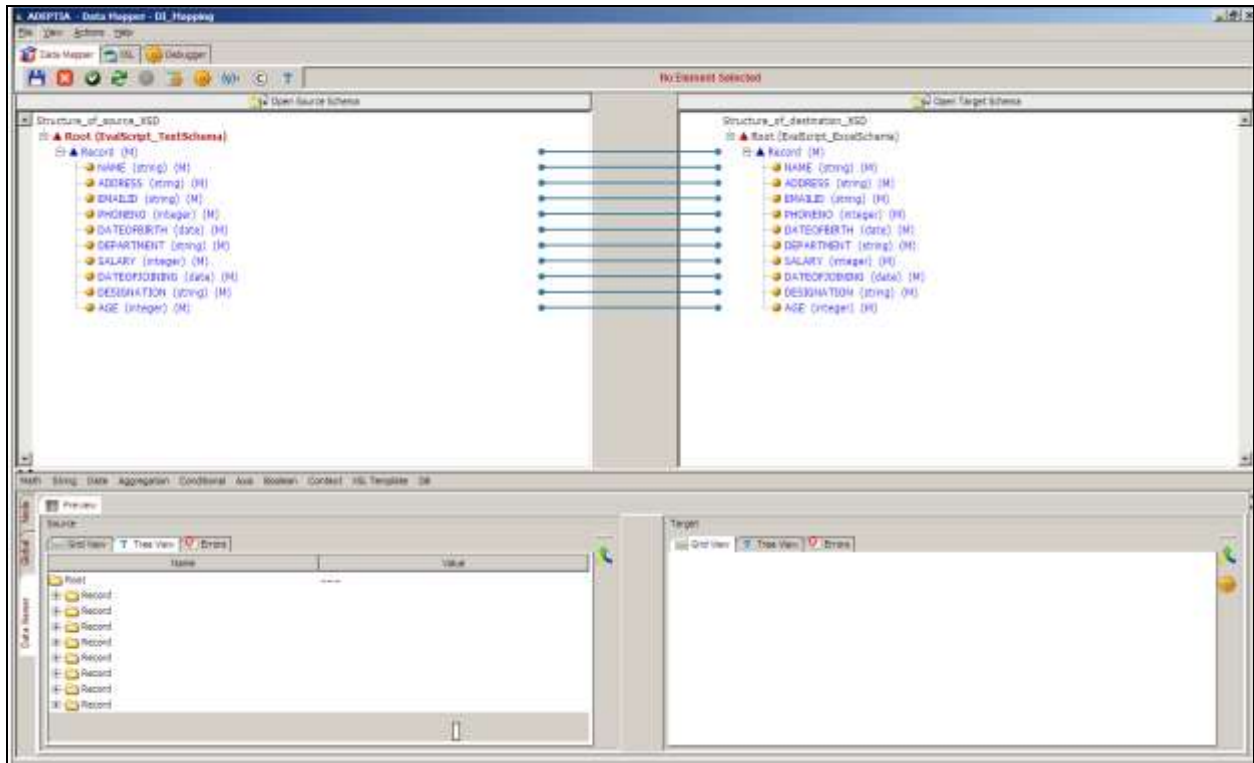
Figure 454: Tree View

9.   To view the values of the record, click [**+]** to expand the **Record**. Values of the expanded record are shown (see Figure 455)*.*
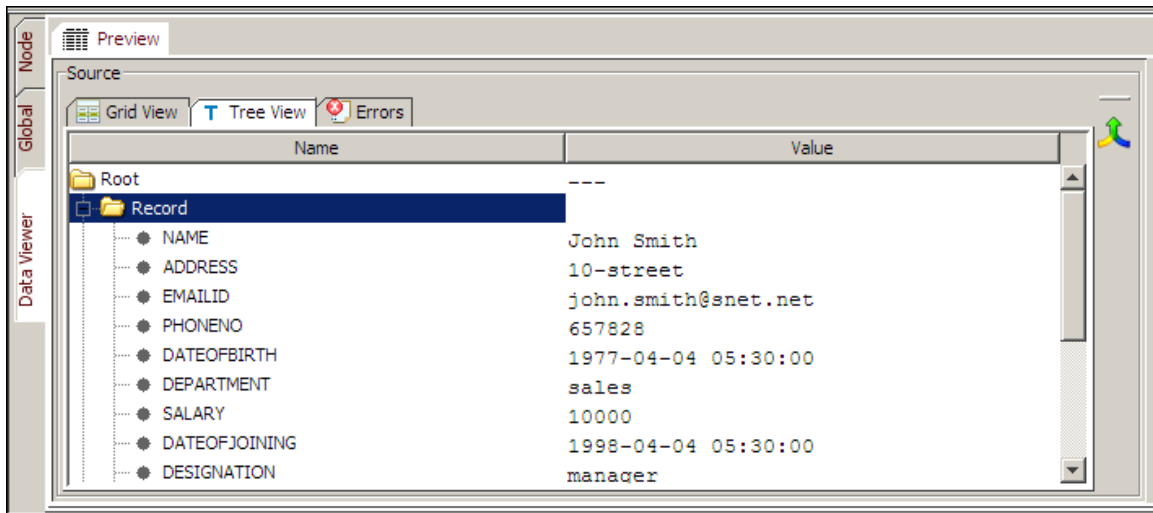
Figure 455: Records in Tree View

10.   Similarly to view values of other records, expand other records.

11. If there is any error encountered in the source data, those error records are shown in the *Errors* tab. To view the error records, click **Errors** tab (see Figure 456).
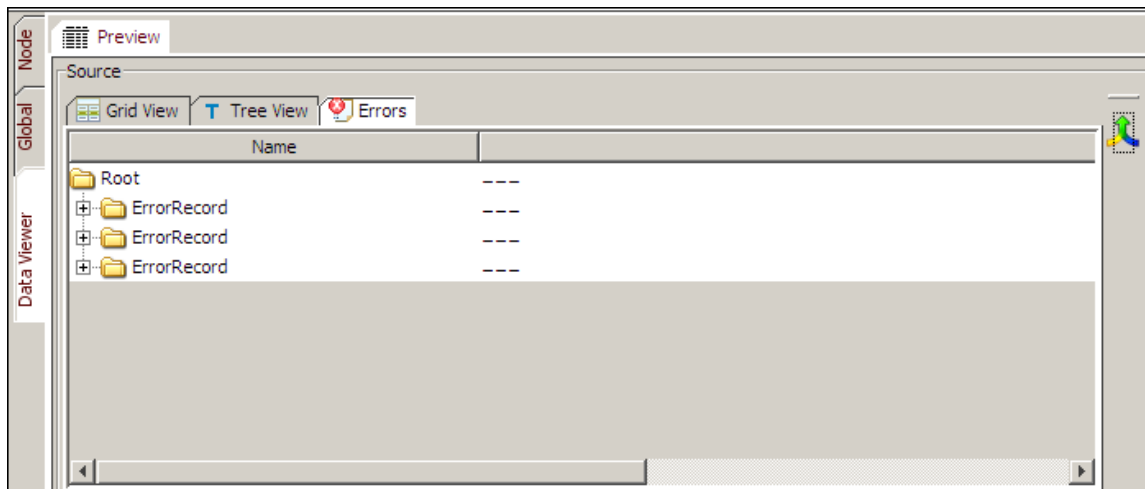
Figure 456: Error Record

12. To view the output record, right click the **Root** element of the target panel and select **Preview** option. The generated output records are displayed in the **Target panel of Preview** pane (see Figure 457).
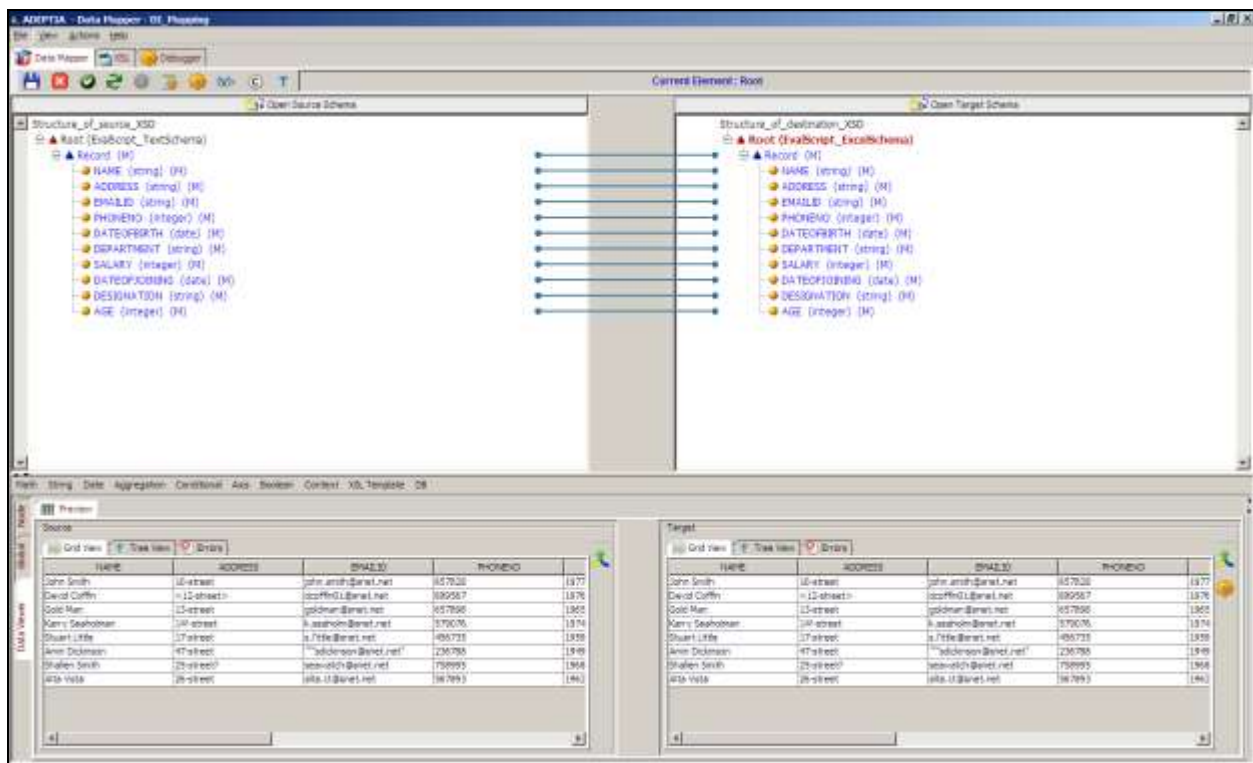
Figure 457: Target Records in Grid View

> ℹ In case XML Schema is used at target end, then unmapped elements are filtered out automatically.

13. To view the error records at the target end, click **Errors** tab of target panel of Data Viewer. It displays:

   - The number of errors occurred during transformation
   - The list of errors occurred during transformation
   - List of enumerated literals for the target element if invalid data is mapped to the target element which is restricted to the enumerated values

14. In case you perform any changes in mapping rules, you need to click ![icon] to refresh the target data according to mapping rules applied.

15. You can also view the output data in hierarchy view, by clicking the **Tree View** tab.

16. To expand the **Source** or **Target** panel, click ![icon] . The **Source** or **Target** panel is shown in the expanded (see Figure 458).

Figure 458: Target Panel in expanded mode

17. To close the expanded **Source** or **Target** panel, click ![icon] .

Viewing Mapping in PDF format

Steps to view mapping activity in PDF format

1. On the Adeptia Suite homepage, go to **Configure > Services > Data Transform** and then click **Data Mapping**.

   The **Manage Data Mapping** screen is displayed (refer to Figure 376).

2. Click the radio button against the mapping activity whose PDF details you want to view. This selects the mapping activity and activates the *PDF View* link. Clicking this link displays a PDF file with all information associated with the mapping activity.

3. This file displays divides the mapping information into various pages. The first page contains mapping information such as mapping name, description; creation details and the group owner (see Figure 459).

Adeptia Mapping Information Document

Mapping Name	EvalScript_Mapping
Mapping Description	Mapping between Text And Excel Schema
Creation Date	08/12/2006 15:43:42
Last Modified On	09/21/2005 10:25:50
Created By	admin
Last Modified By	admin
Group Owner	administrators

Figure 459: Mapping Information Document

4. The next page displays all source and target schema information (see Figure 460).

Schema Information

Source Schemas		
Schema Name	Schema ID	Schema Root
EvalScript_TextSchema	TextSchema:1921680010061 15537684214000004	Root

Target Schemas			
Schema Name	Schema ID	Schema Root	Stream Name
EvalScript_TextSchema	TextSchema:1921680 0100611553768421400 0004	Root	output_1

Figure 460: Schema Information

5. The next page displays all other mapping information such as XSL templates used, variables defined, properties, keys, and sorting rules (see Figure 461).

Global Variables	
Variable Name	Value
var2	50

Custom Methods			
Alias Name	Class Name	Method Name	Paramaters
java	class1	add	02

Mapping Information

TARGET NAME	TARGET FIELD	MAPPING FIELD	FOR EACH	SORTING RULES			COMMENTS	LOCAL VARIABLES	
				Source Element	Data Type	Order		Variable Name	Value
EvalScript_TextSchema	/Root/Record/NAME	$input_EvalScript_TextSchema/Root/Record/NAME							
EvalScript_TextSchema	/Root/Record/ADDRESS	$input_EvalScript_TextSchema/Root/Record/ADDRESS							
EvalScript_TextSchema	/Root/Record/EMAILID	$input_EvalScript_TextSchema/Root/Record/EMAILID							
EvalScript_TextSchema	/Root/Record/PHONENO	$input_EvalScript_TextSchema/Root/Record/PHONENO							
EvalScript_TextSchema	/Root/Record/DATEOFBIRTH	$input_EvalScript_TextSchema/Root/Record/DATEOFBIRTH							
EvalScript_TextSchema	/Root/Record/DEPARTMENT	$input_EvalScript_TextSchema/Root/Record/DEPARTMENT							
EvalScript_TextSchema	/Root/Record/SALARY	$input_EvalScript_TextSchema/Root/Record/SALARY							
EvalScript_TextSchema	/Root/Record/DATEOFJOINING	$input_EvalScript_TextSchema/Root/Record/DATEOFJOINING							
EvalScript_TextSchema	/Root/Record/DESIGNATION	$input_EvalScript_TextSchema/Root/Record/DESIGNATION							
EvalScript_TextSchema	/Root/Record/AGE	$input_EvalScript_TextSchema/Root/Record/AGE							
EvalScript_TextSchema	/Root/Record	$input_EvalScript_TextSchema/Root/Record							

Figure 461: Detailed Mapping Information

View Mapping in Read-Only Mode

If you have read-only rights, you can still view a mapping activity. You can view the applied mapping, create new mapping rules, edit existing mapping rules and run simulation. However, you cannot save the mapping activity.

Steps to view mapping in read-only mode

1. On the Adeptia Suite homepage, go to **Develop > Services > Data Transform** and then click **Data Mapping**.

The *Manage Data Mapping* screen is displayed (refer to Figure 462).

Figure 462: Manage Data Mapping Screen

2. Click the mapping activity that you want to view in read-only mode. The *View Data Mapping* screen is displayed (see Figure 463).

Figure 463: View Data Mapping

3. Click the **Data Mapper** button. This displays the selected mapping activity in the Data Mapper applet in read-only mode (see Figure 464).
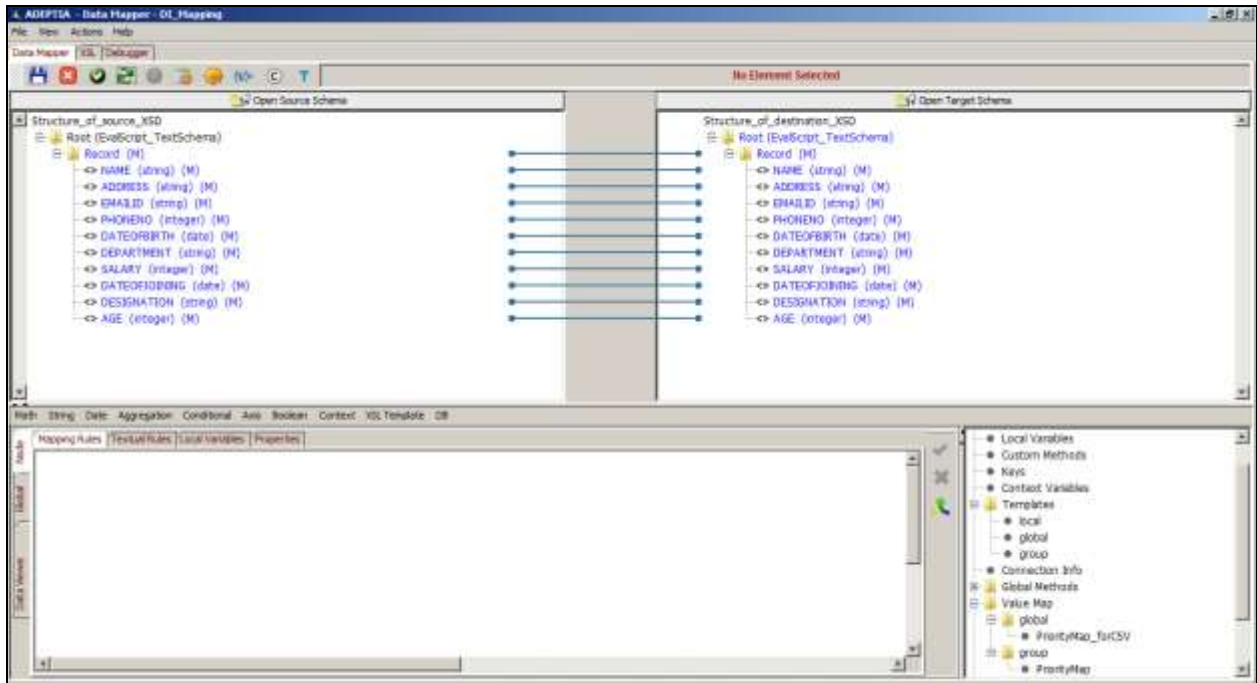
Figure 464: Data Mapper in Read-Only Mode

> ℹ️ In the read-only mode all save options in the Data Mapper are disabled.

4. You can edit this mapping activity, by adding new mapping rules, or modifying existing ones. Additionally, you can also run simulation on this mapping.

5. Once you have made all changes, if you try and save the modified mapping, you will not be able to save it, as all save options are disabled in read-only mode. The **Save** (💾) icon and the **Save** option in the **File** menu are disabled. Additionally, after making the changes, if you close the Data Mapper applet, then the pop-up to save the mapping activity before exiting, will not appear.

Splitting Source Data

Splitting feature enables you to process large files. You must use splitting if your source file is huge. If you do not use splitting in this case, then Data Mapper may not be able to map it. If the data in the source file is huge, you can split the source data into different chunks. You can specify the size of the chunks in terms of the number of records or data streams. In the output, however, only one file is generated at the location specified in the target activity.

Steps to split the source data

1. Click **Advanced Properties** on the Create Data Mapping screen to expand the advanced properties of the new Mapping activity (see Figure 465).

Figure 465: Advanced Properties

2. Select the **Splitting Data** checkbox to enable the splitting of data.

> If you select this checkbox, then you have to split the data. You can do this by setting the Splitter XPath in the Data Mapper applet. Alternately, you can split the data by *Enabling Quick Splitting* feature.

3. Enter the number of records into which you want to split the data, in the *Split Number of Records* field. For example, if you have a source file of 100,000 records and you want split this file into records of 10,000 each, then you need to enter 10,000 in this field.

4. Select the **Parallel Processing** checkbox to parallel process these records. By default, records are processed sequentially.

5. Enter the number of chunks you want to process concurrently, in the **Maximum Concurrent Processes** field. By default, value of 1 is entered.

> It is advised to change this value, if *Parallel Processing* is selected. Else, only one chunk is processed at a time and hence sequentially.

6. Select the owner from the **Owner** dropdown list. By default, Administrator is selected.

7. Select the *Read, Write* and *Execute* checkboxes to set permissions for the Owner, Group or Other entities. By default, permissions are selected for the Owner and Group entities.

8. If mapping has been saved in the Data Mapper applet, then the XSL code is displayed in **Mapping XSL** field. This is a very useful feature. You can enter new XSL code or edit existing code to test or debug the mapping. If you save these changes, then they are reflected in the applet. For example, if you need to change the value of a constant, you can change it from this screen itself, instead of the applet. Additionally, any modifications made in the Mapping XSL code in the Data Mapper applet, will overwrite the XSL code in this field.

> If the Advanced Properties and the Data Mapper screens are open simultaneously, then the changes made in the Mapping XSL field in the Advanced Properties screen will not be reflected in the Data Mapper screen.

9. The mapping XML code is displayed in **Mapping XML** field. You can enter new code or edit existing code. If you save these changes, they will be reflected in the applet.

10. Click **Save** to save the splitting details.

Set Splitter XPath

To split data you need to set the Splitter XPath on the source hierarchy. The data is split and sent to the transformer which executes the split data. You can set the Splitter XPath in case of a single source schema only. You can also set multiple Splitter XPaths in a source schema.

The following example explains the use of multiple Xpath splitting:

```
Root
|
|- R1
|   |-R1C1
|   |-R1C2
|- R2
|   |-R2C1
|   |-R2C2
```

In this scenario we have **Root** element as the Root for schema. It has two child elements **R1** and **R2** at the first level. R1 element has two children **R1C1** and **R1C2. R2** element has two children **R2C1** and **R2C2**.

If in the source xml, there are multiple occurrences for **R1** and **R2** elements, then we need to set split XPath on both **R1** and **R2** elements. If we set split XPath on **R1** element only then the Data Mapper will assume that **R2** has only one occurrence and vice versa. Similarly, if child elements **R1C1**, **R1C2**, **R2C1** and **R2C2** have multiple occurrences, then also **R1** and **R2** should be set as split XPath. Thus the thumb rule is that the top most node which is repeating, should be set as splitter XPath.

Once splitter XPath is defined, during execution, mapping will split the source hierarchy using each splitter Xpath and each chunk will have records specified by *Split Number of Records*.

In this scenario, when we set **R1** and **R2** as split XPath then *Split Number of Records* property is applied for both **R1** and **R2**. For example if the value of *Split Number of Records* property is 500 then 500 records of **R1** and 500 records of **R2** are selected.

Splitting data and setting Splitter XPath is very effective when the source data is very large. You can set the Splitter XPath in case of a single source and target schema. You can also set multiple Splitter XPaths in a source and target schema.

> **i** It is advised to always split the file and set the Splitter XPath if the file size is greater than 30 MB. This enhances the performance and increases data reliability, as in some cases such execution of large data can fail and generate errors.

Steps to set Splitter XPath

1. Ensure that all the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the source schema element that you want to split and select the **Set as Splitter XPath** option. A screen showing the Splitter XPath details is displayed (see Figure 466).
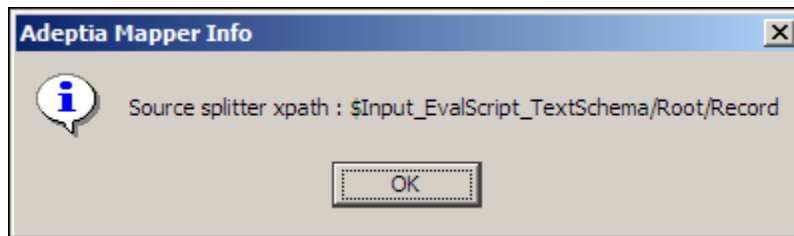
Figure 466: Splitter XPath Details

> **i** Splitting can be set only on root or record levels. You cannot split on an element level.

3. Click **OK**. This splits and sets the Splitter XPath on the selected source element.

> **i** Once a Splitter XPath is set for a source element, the letter **(S)** is displayed next to that source element. This signifies that the source element has been split and the Splitter XPath has been set. Refer to Table of Suffixes for details on suffixes displayed next to an element.

Once you have set a Splitter XPath, you can view it in the Output XML.

Enabling Quick Splitting

Another way of splitting source data is to enable the quick splitting feature. This splits the source and sets the Splitter Xpath.

Steps to split data by enabling quick splitting

1. Ensure that all the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Select **Actions** menu and select *Enable Quick Splitting* option. Alternately, you can press **<Ctrl> + <Q>**. This splits the data and displays the splitter Xpath details (see Figure 467).
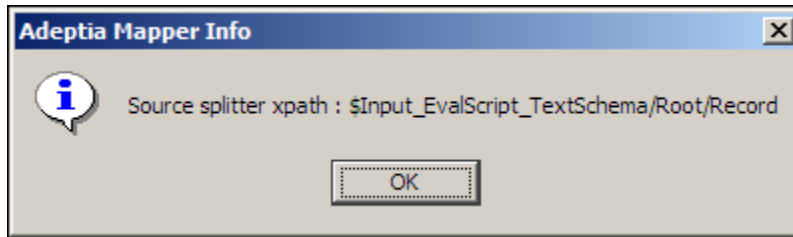
Figure 467: Splitter Xpath Details(Enable Quick Splitting)

3. Click **OK**. This splits and sets the Splitter XPath on the selected source element.

However, quick splitting splits the records in default numbers. To split into a specific number, you need to set the Splitter Xpath explicitly.

> Once a Splitter XPath is set for a source element, the letter **(S)** is displayed next to that source element. This signifies that the source element has been split and the Splitter XPath has been set. Refer to [Table of Suffixes](#) for details on suffixes displayed next to an element.

Steps to view Splitter XPath

1. Click **View** menu and select **View Mapping XML**. The Mapping XML window is displayed. The Splitter XPath details are displayed with a $Input tag prefixed to Source XPath code (see Figure 468).
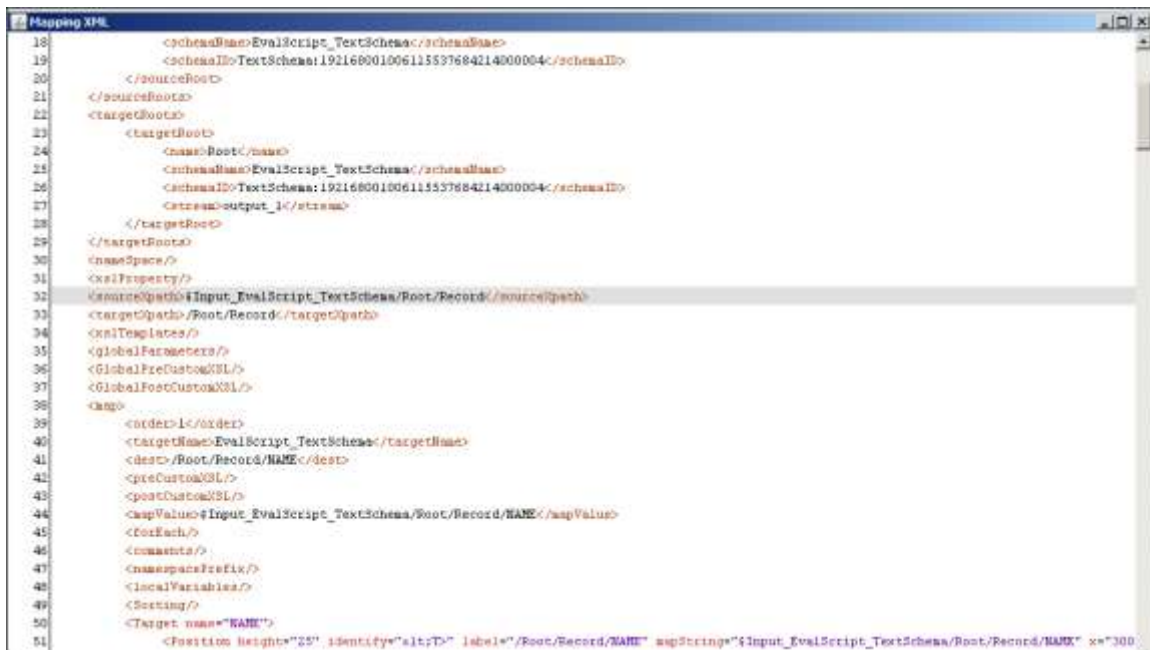
Figure 468: Splitter XPath in Mapping XML

You can remove a Splitter XPath that has been set for a source element.

Steps to remove Splitter XPath

1. Right-click the source schema element whose Splitter XPath you want to remove and select the **Remove Splitter XPath** option. A screen showing the Splitter XPath details is displayed (see Figure 469).
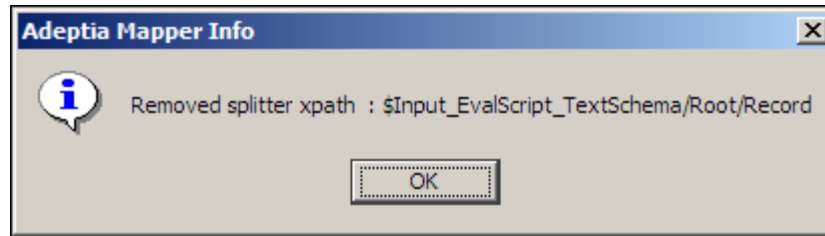
Figure 469: Remove Splitter XPath Details

2. Click **OK**. This removes the Splitter XPath set on the selected source element.

Set Merger XPath

Once you have split the source data by setting the Splitter XPath on a source element, you need to merge the split data at the target end. For this, you need to set the Merger XPath on a target element.

Setting the Merger XPath is largely dependent upon the Splitter XPath. You need to ensure that the number of Splitter XPaths and the Merger XPaths at the source and target schemas respectively are the same.

Steps to set Merger XPath

1. Ensure that all the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that a Splitter XPath has been set for a source schema element.

3. Right-click the target schema element on which you want to merge the split data and select the **Set as Merger XPath** option. A screen showing the Merger XPath details is displayed (see Figure 470).
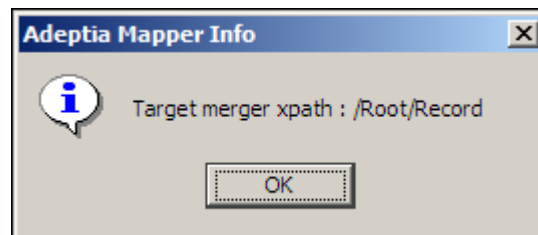
Figure 470: Merger XPath Details

> Merging can be set only on root or record levels. You cannot merge on an element level.

4. Click **OK**. This merges the split data and sets the Merger XPath on the selected target element.

> Once a Merger XPath is set for a target element, the letter **(S)** is displayed next to that target element. This signifies that the split data has been merged on the target element and the Merger XPath has been set. Refer to Table of Suffixes for details on suffixes displayed next to an element.

> You can view Merger XPath details in the output XML. A $ input tag is prefixed to the line containing the Splitter XPath details.

> When using Enable Quick Splitting feature, the Merger Xpath is also automatically set when this feature is selected.

5. Once you have set a Merger XPath, you can view it in the Output XML.

Steps to view Merger XPath

1. Click **View** menu and select **View Mapping XML**. The Mapping XML window is displayed. The Merger XPath details are displayed with *Target* XPath code (refer to Figure 468).

   You can remove a Merger XPath that has been set for a target element.

Steps to remove Merger XPath

1. Right-click the target schema element whose Merger XPath you want to remove and select the **Remove Merger XPath** option. A screen showing the Merger XPath details is displayed (see Figure 471).
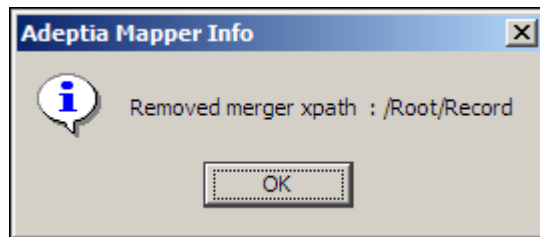
Figure 471: Remove Merger XPath Details

2. Click **OK**. This removes the Merger XPath set on the selected target element.

Assign Data Streams

When mapping multiple source and target schema elements, you need to assign streams to the root element of the target schema structures.

Steps to assign data streams

1. Ensure that all the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the root element of a target schema structure and select the **Assign Stream** option. The **Assign Streams** dialog box is displayed (see Figure 472).

Order	Schema Name	Root Element	Stream Name
1	EvalScript_TextSchema	Root	output_1
2	EvalJMSE_TextSchema	Root	output_2
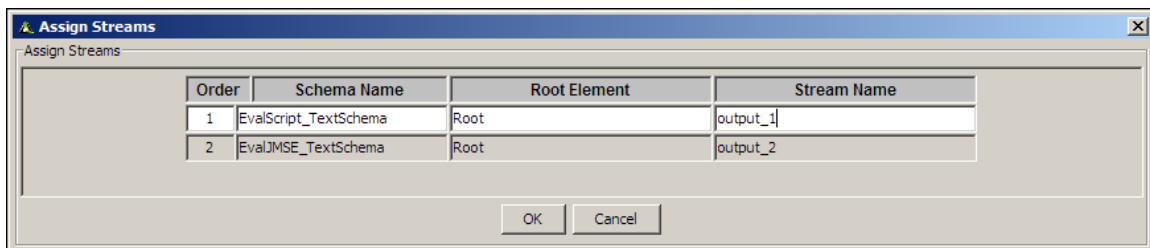
Figure 472: Assign Streams

3. This dialog box contains the fields listed in the table below. All fields are populated with values.

Table 11: Fields of Assign Streams Screen

Field	Description
Order	Represents the order of occurrence of target schema in the Data Mapper. This field is a read-only field and is automatically populated with value.
Schema Name	Represents the name of the schema which includes the root to which the stream is to be assigned. This field is a read-only field and is automatically populated with value.
Root Element	Represents the root element to which the stream is to be assigned. This field is a read-only field and is automatically populated with value.
Stream Name	Represents the name of the stream to be assigned. This field is automatically populated with value, but is an editable field.

> **i** The root elements, occurrence order and default stream names of all the loaded target schemas are listed in the Assign Streams dialog box. You can edit the stream name.

> **i** It is important to note that the order of streams and the stream names, listed in the Assign Streams dialog box (Mapping) and the Multiple Streams defined in Process Designer should be the same. If you edit a stream name of a mapping activity or add or delete a stream or schema after the activity has already been used in the Process Designer, then you need to update it manually in the Process Designer (Create Multiple Streams section). To know how to use multiple stream in Process Designer, refer to the section Creating Multiple Stream.

4. Enter the name of the data stream(s) that you want to edit, for the target element(s), in the textbox **Stream Name**.

> **i** The name of the data stream does not accept special characters and white spaces.

5. Click **OK** to assign the stream(s), else click **Cancel**.

Remove Mapping of an Element

You can remove mapping associated with a particular element.

Steps to remove mapping of a particular element

1. Ensure that all the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the target element whose mapping you want to remove and select the **Remove Mappings** option.

3. The **Remove Options** window is displayed (see Figure 473).
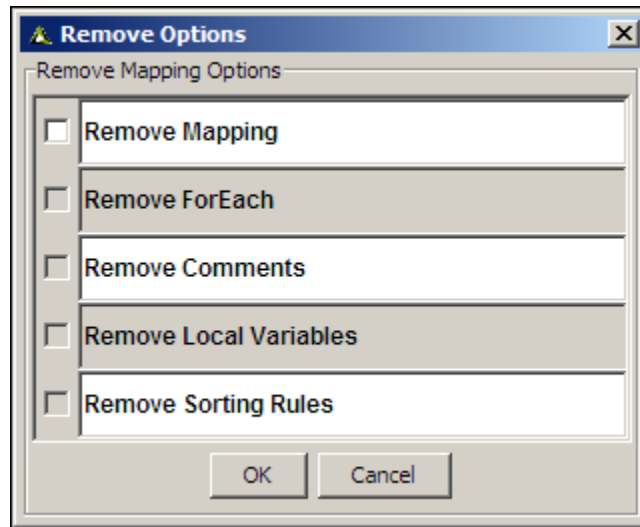
Figure 473: Remove Options (Particular Element)

This screen displays a list of properties and variables associated with the selected element that can be removed with the mapping.

> Only the *Remove Mapping* is displayed as always enabled. The other options are enabled only if they have been defined for the particular element.

4. Select the checkbox(s) of the options that you want to remove and click **OK** button. All the selected options and mapping associated with the particular element will be removed.

Using Context Schema

Context schema allows you to map Context Variable with any element of schema.

This section explains you how to use context schema to map context variable.

High level steps to use context schema are as follows:

- Create Context Schema Definition
- Load Context variables
- Map schema elements
- Modify streaming properties of Mapping Activity

Create Context Schema Definition

First of all you need to create context schema definition. Context schema definition contains name of the context variable that you want to map to other element. While creating context schema definition, you can create context variables or you can import it from the process flow within which you want to use this mapping activity.

Steps to create Context Schema Definition

1. In Data Mapper applet, from the **Action** menu and select **Create Context Schema Definition**. The **Create Context Schema Definition Dialog** window is displayed (see Figure 474).
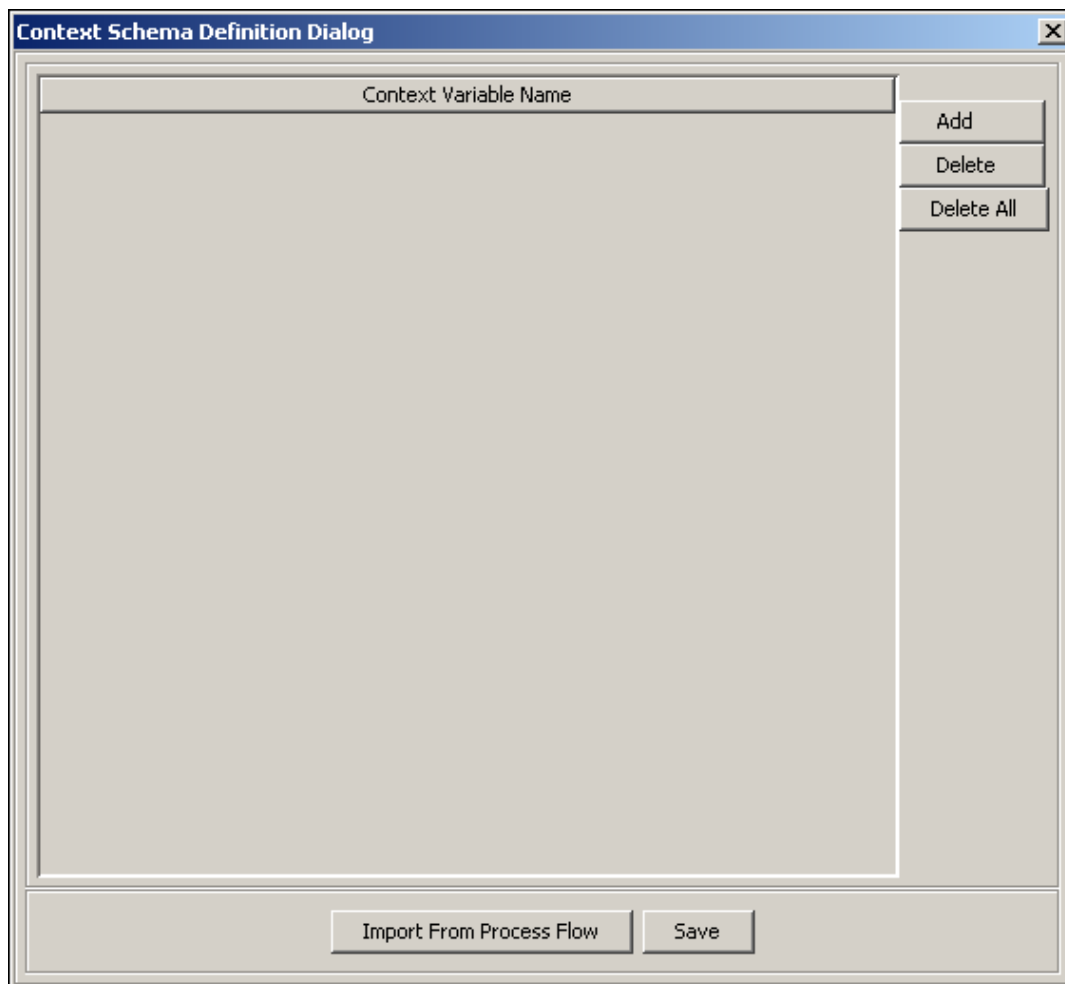
Figure 474: Create Context Schema

2. To add a context variable click **Add** button and enter the name of the variable.

3. Repeat the same steps to create other variables (see Figure 475).
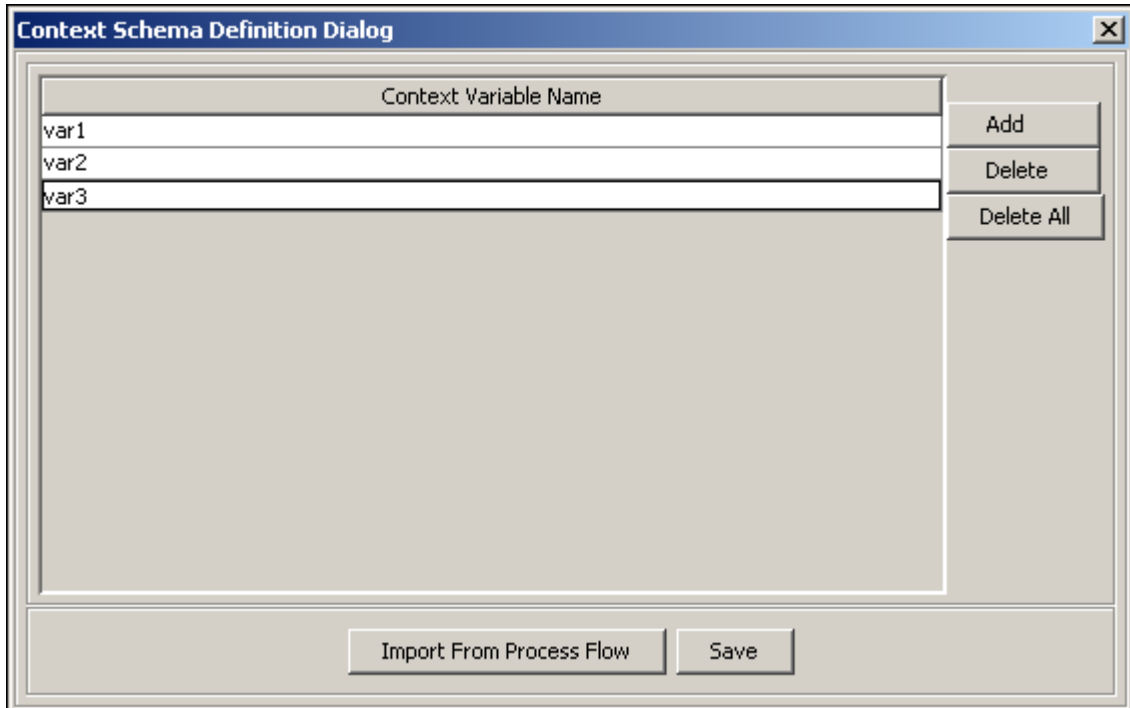
Figure 475: Add Variables

4. You can also import the context variables of the process flow in which you want to use this mapping activity. To import context variables from process flow, click **Import From Process Flow** button. **Import Context Variable** dialog box is displayed (see Figure 476)
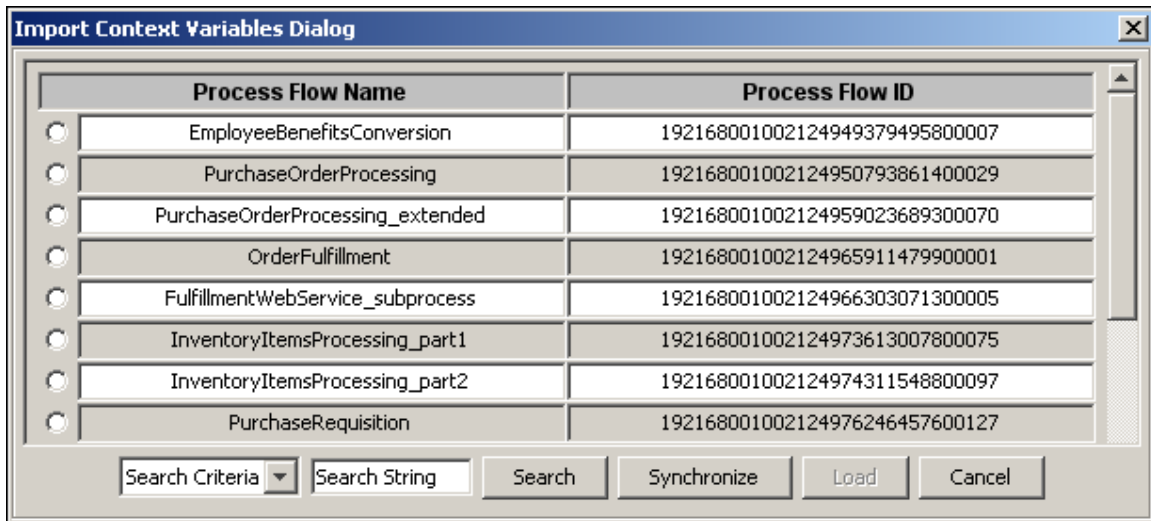
Figure 476: Import Context Variables

5. Select the process flow, from which you want to import context variables and click **Load**.

6. Click **Save**.

Load Context Variable

Once you have created the context schema, you need to load it at source or target end depending on your need.

Steps to Load Context Schema Definition

1. To load the Context Schema at source end, click the **Open Source Schema** button in the source panel. *Select Schema* dialog box is displayed (see Figure 477).
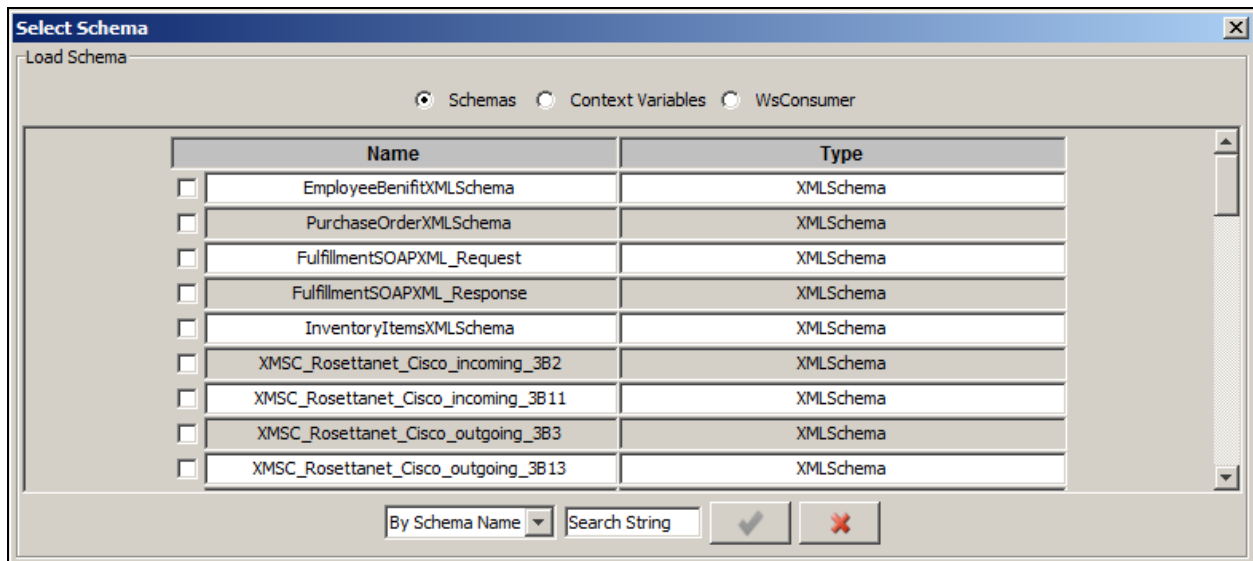
Figure 477:Load Context Variable

2. Select the **Context Variable** radio button and click the **Load** button. The variables on Context schema are loaded in source panel.

3. Similarly you can load context schema in the target panel.

Map Schema Elements

Once you load the context schema, you can map its variables to elements of other schema (see Figure 478).
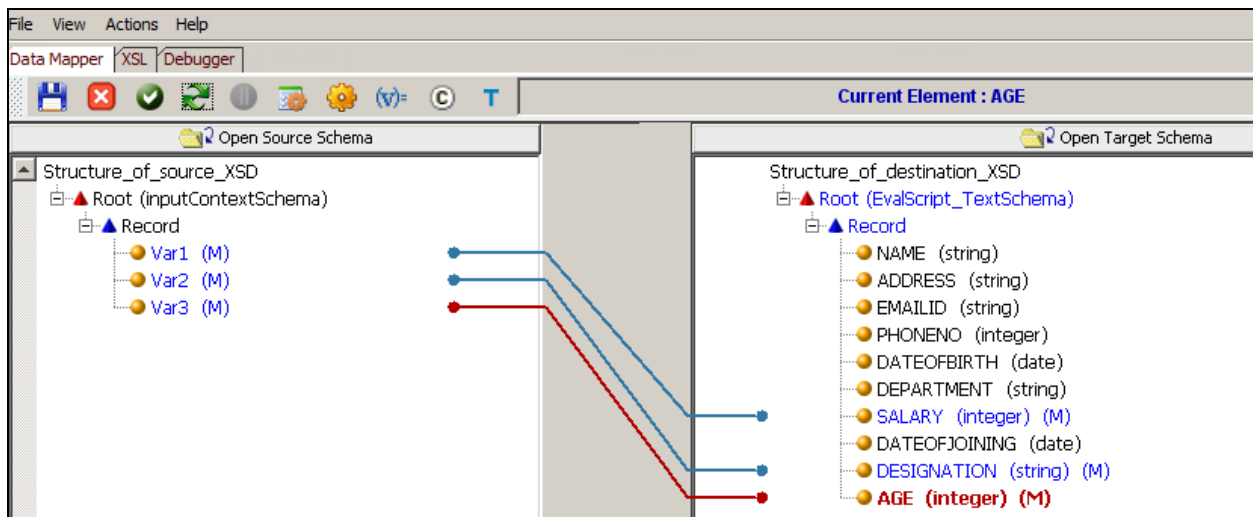
Figure 478:Map elements
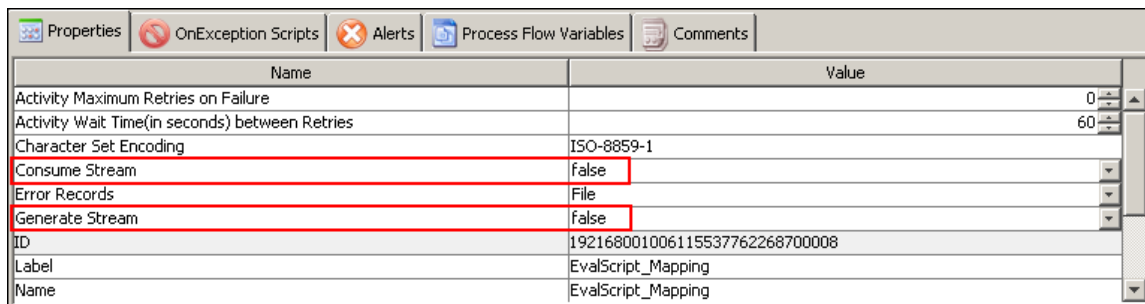
Modify Streaming Properties of Mapping Activity

Once you created the mapping activity using context schema you need to changes its streaming properties while creating process flow using this mapping activity.

If Context Schema is loaded at source side then there is no need to provide the source (dummy source) stream to the Mapping activity. Similarly if Context schema is loaded at target side then Mapping activity will not generate any output stream, so there is no need to attach dummy target. To achieve this **Generate Stream** and **Consume Stream** property has been added to Data Mapper activity in the Process Designer. User can disable these properties based on whether Context schema is loaded at source or target side.

Steps to disable input and output stream of mapping activity

1. While designing the process flow, double click the mapping activity that you have created using context schema definition. Properties of the mapping activity are displayed (see Figure 479)

Figure 479:Change streaming

2. Change the value of **Consume Stream** or **Generate Stream** property to *false.*

> If Context Schema is used at source side, then at run time the actual value of these context variables will be used in the Data mapping. Similarly if Context Schema is used at target side then the output of the data mapping will be parsed and corresponding new value of these context variables will be set.

Using Mapping Functions

You can map source and target schema elements using the various mapping functions built-in the Data Mapper. All these mapping functions comprise of sub-functions, which are used to map elements.

Some mapping functions require use of constant values for mapping elements. For this, you need to add the constant node to the Mapping Graph Area.

Adding a Constant

Steps to add a Constant

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that the source and target elements to be mapped are selected and displayed in the Mapping Graph Area.

3. Right-click the blank space in the Mapping Graph Area and select the **Constants** option. A **Constant** node is displayed in the **Mapping Graph Area** (see Figure 480).
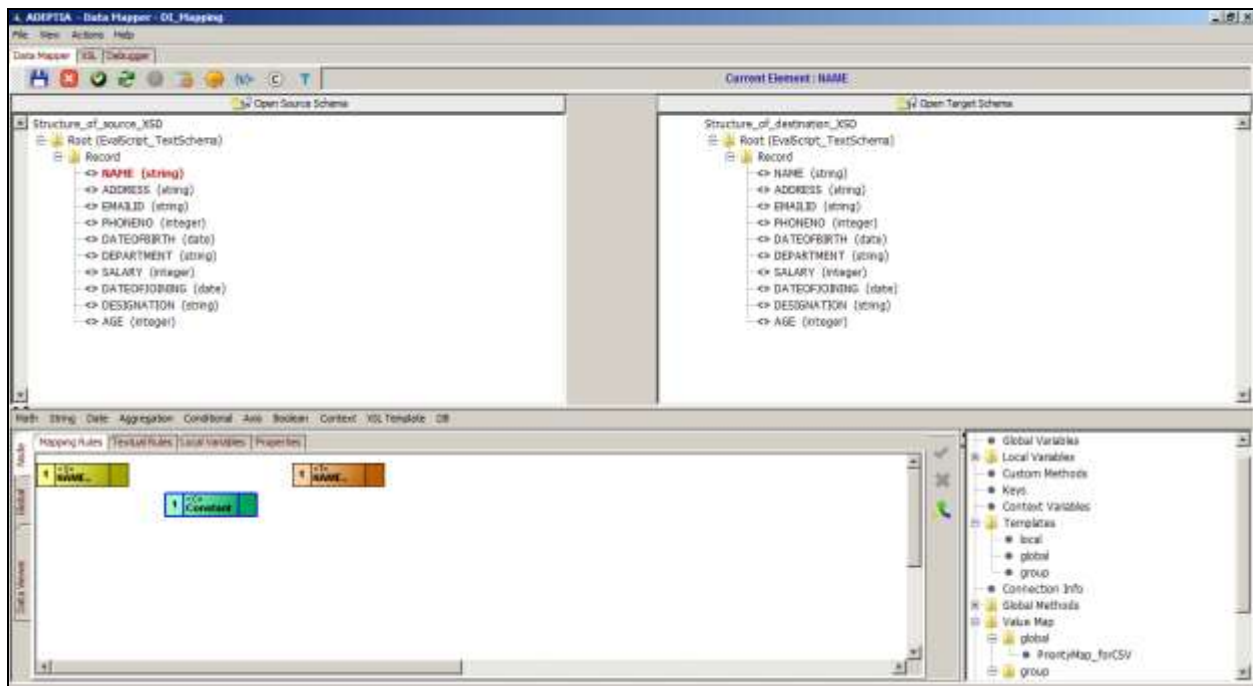
Figure 480: Add a Constant Node

4. Double-click the **Constant** node. The **Input** dialog box is displayed (see Figure 481).
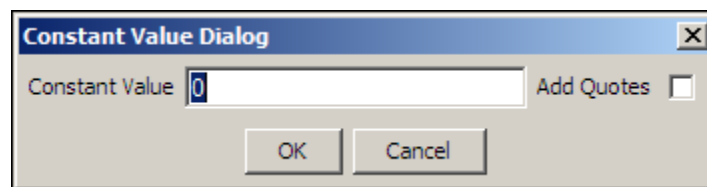
Figure 481: Enter Constant Value

5. Enter the desired constant value in the **Constant Value** field.

6. Mark the **Add Quotes** checkbox as checked, if you want to define the constant as a string. Else, the constant is defined as numeric data. By default, this checkbox is unchecked, implying that a constant is defined as a number. However, you can change the constant to string data type by checking this checkbox anytime.

> If the constant is defined as a string data type, then Appose trophy (') symbol is supported. Additionally, you can enter constants as an input for Select query too.
>
> You can also define an element name as a constant, and leave the *Add Quotes* checkbox as unchecked. This will generate a valid XSL.

7. Click **OK**. This displays the entered value in the **Constant** node in the **Mapping Graph Area**.

Using Math Function

The Math mapping function enables you to map elements by performing simple mathematic operations. It comprises of various sub-functions, which are listed in the table below.

Table 12: Sub-Functions of Math Mapping Function

Mapping Function	Sub-Functions	Description	Example
Math	Add	Adds two numeric elements.	*(10)* + *(5)* returns 15
	Ceiling	Rounds a passed number to the smallest integer that is greater than or equal to the passed number.	Ceiling *(33.9)* returns 34
	Division	Divides two numeric elements.	*(100)* div *(5)* returns 20
	Floor	Rounds a passed number to the largest integer that is not larger than the passed number.	floor *(33.9)* returns 33
	Mod	Returns the remainder of a division between two numeric values.	*(50)* mod *(3)* returns 2
	Multiply	Multiplies two numeric elements.	*(10)* * *(5)* returns 50
	Round	Rounds a passed number to the nearest integer.	round *(4.6)* returns 5
	Subtract	Subtracts one numeric value from other.	*(10) – (5)* returns 5
	Number	Converts parameter to a number.	number *("-17.3")* returns -17.3
	Format number	Transforms input data into a specific format. The specific formats allowed are decimals (up to 2 places) and %. This function can be used only if the target node is of string data type.	format-number *(12.5, '$#.00")* returns $12.50

You can use the required sub-function of Math mapping function to map elements. The process of using the Math function is the same for all its sub-functions. Thus, the mapping process using one sub- function is outlined below.

Steps to map elements using the 'Division' Math Mapping Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that the source and target elements to be mapped are selected and displayed in the Mapping Graph Area.

3. You need to add a constant value for using this function. Once it is added, a *Constant* node with its value is displayed in Mapping Graph Area.

4. Click **Math** function menu and select the **Division** sub-function. A div node is displayed in the Mapping Graph Area (see Figure 482).
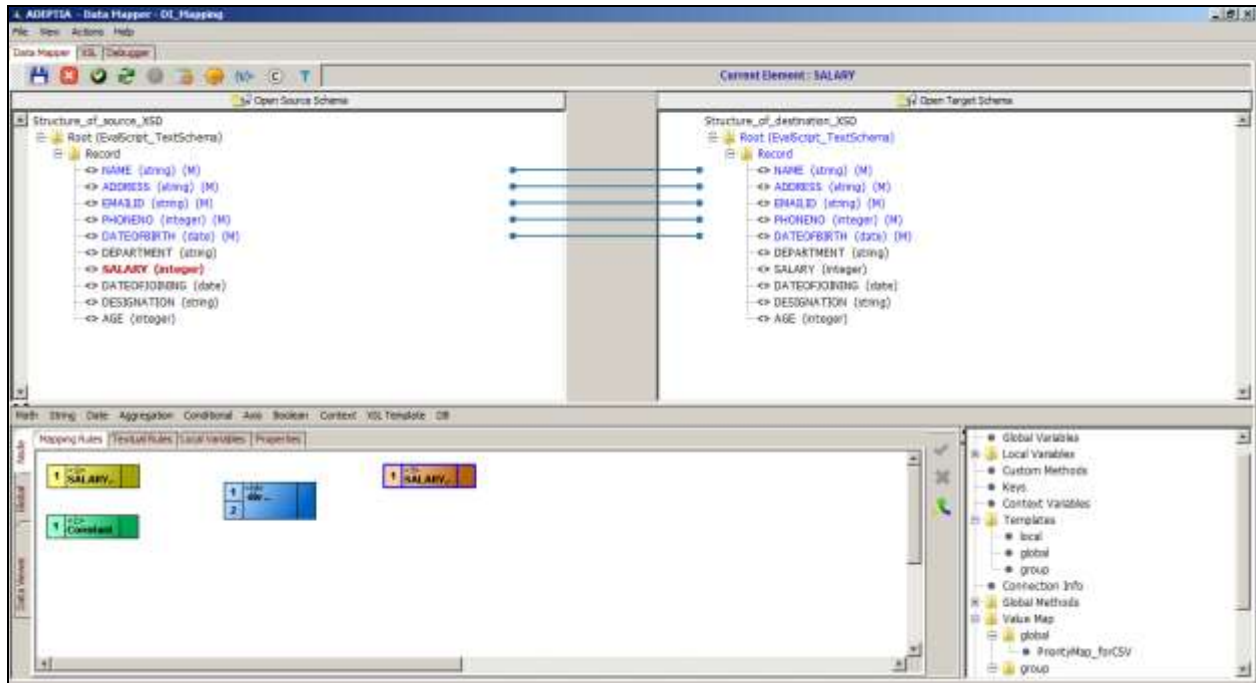
Figure 482: Add Div Sub-Function Node

5. Create a link from the output of the *Source* element to the first input of the *div* node.

6. Create a link from the output of *Constant* node to the second input of the *div* node.

7. Create a link from the output of the *div* function node to the *Target* element (see Figure 483).
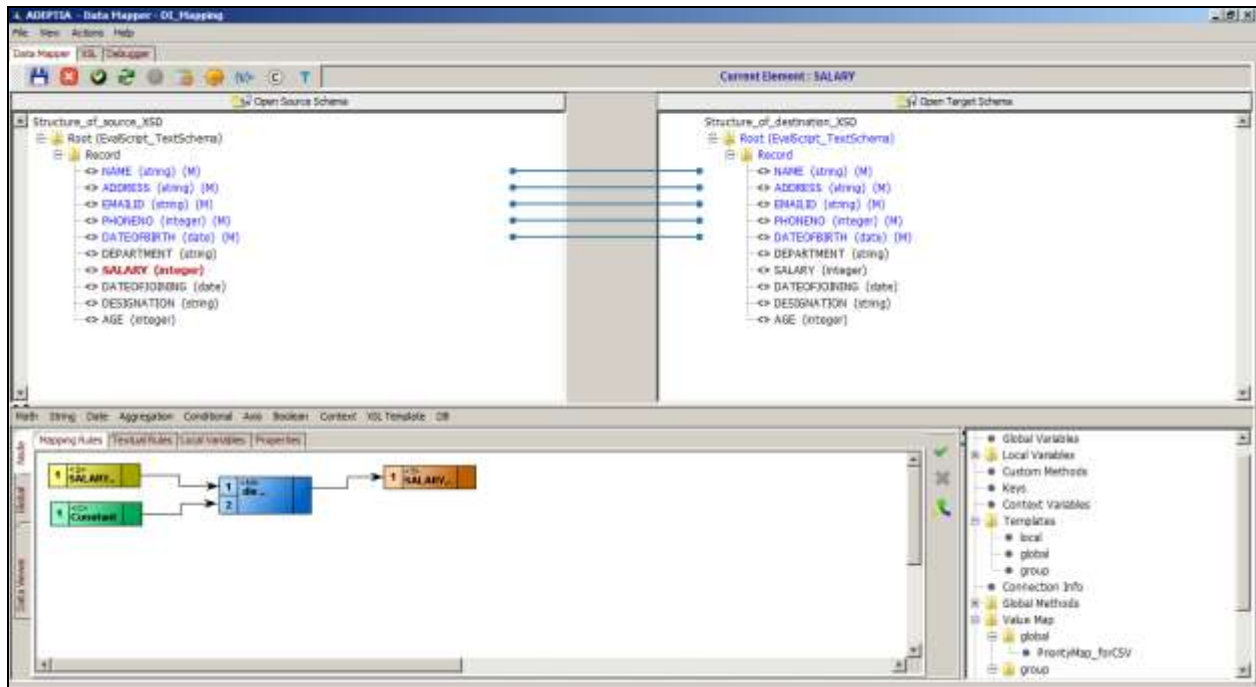
Figure 483: Create Links between Nodes for Mapping Elements using Div Function

8. Click **Apply Mapping** ( ) button. This maps elements using the *div* sub-function. A line is displayed between the source and target panels showing the mapping of the source element to the target element.

Using String Function

The String mapping function enables you to map elements by manipulating strings. It comprises of various sub-functions, which are listed in the table below.

Table 13 : Sub-Functions of String Mapping Function

Mapping Function	Sub-Functions	Description	Example
String	Concat	Concatenates the second string after the first string. This function accepts only two parameters in graphical mode. However, there is no limitation to the number of parameters in text mode.	concat *('Jane', 'Brown')* returns the string JaneBrown
	Substring	Returns the sub string from the string starting from the specified position and of the specified length. When using this function, you always start counting its position from 1. This implies that the second argument (position) is always greater than or equal to 1.	substring *('abcdef' ,3, 4)* returns cdef

Mapping Function	Sub-Functions	Description	Example
	String	Returns the string value of the argument.	string ('1000') returns the string 1000
	Translate	Translates each occurrence of the first argument in the specified string to the second argument. Both the arguments must consist of one or equal number of characters.	translate ('alphabet', 'a', 't') returns t alphabet
	Substring-after	Returns the string after the specified argument from the string.	substring-after ('print=yes', '=') returns yes
	Substring-before	Returns the string before the specified argument from the string.	substring-before ('print=yes', '=') returns print
	Starts-with	Returns true if the string starts with the specified argument or false otherwise.	starts-with ('Sales', 'S') returns True
	String-length	Returns the length of the specified string.	string-length ('adeptia') returns 7
	Contains	Returns true if the string contains the specified argument or false otherwise.	contains ('adeptia', 'tia') returns True
	Normalize-space	Removes leading and trailing white space (space, tab and new line) from a string, and replaces internal sequences of white space with a single space character.	normalize-space (' Adeptia Inc ') returns Adeptia Inc
	Name	Returns the name of the source node and field name on which mapping is currently done.	If the context node is an element named <ms:schema>, then name () will return

Mapping Function	Sub-Functions	Description	Example
			ms:schema
	Local-name	Returns name with the name prefix. If no prefix was specified, then name and local name are same.	If context node is an element named *<ms:schema>*, then local-name () will return schema

You can use the required sub-function of String mapping function to map elements. The process of using the String function is the same for all its sub-functions. Thus, the mapping process using one sub- function is outlined below.

Steps to map elements using the 'Concat' String Mapping Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that the source and target elements to be mapped are selected and displayed in the Mapping Graph Area.

> You need to load two source elements for using this mapping function.
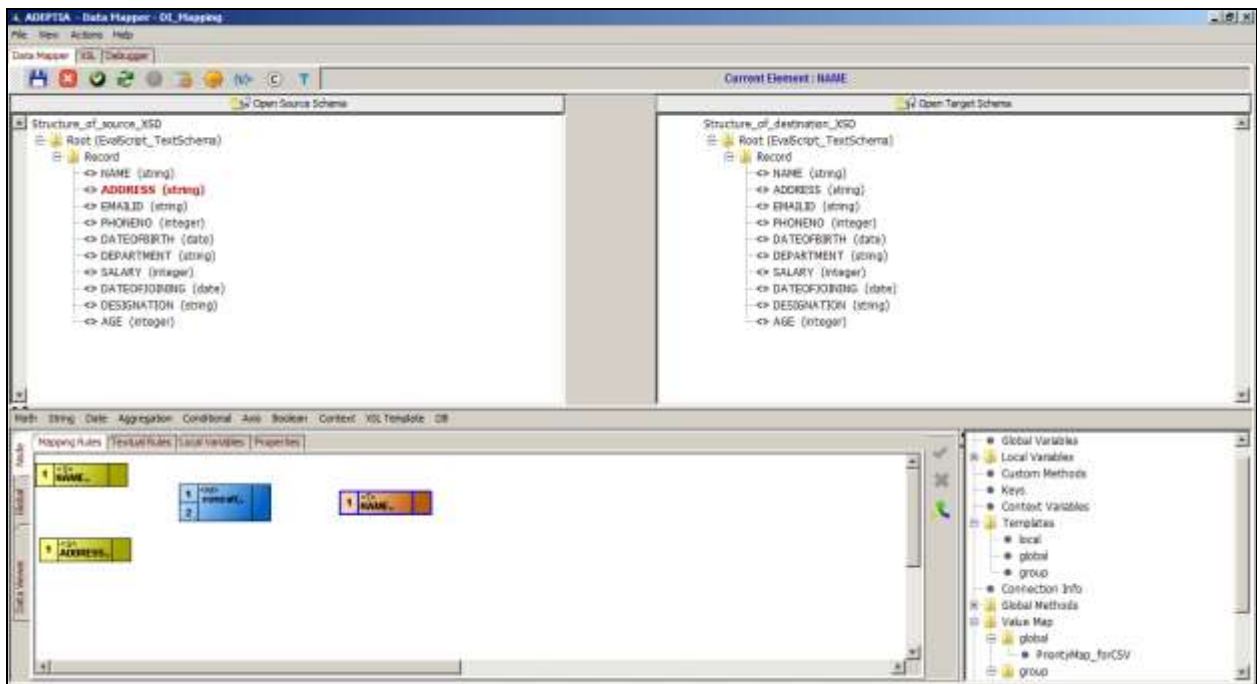
Figure 484: Add Concat Sub-Function Node

3. Create a link from the output of the first *Source* element to the first input of the *concat* node.

4. Create a link from the output of the second *Source* element to the second input of the *concat* node.

5. Create a link from the output of the *concat* node to input of the *target* element node (see Figure 485).
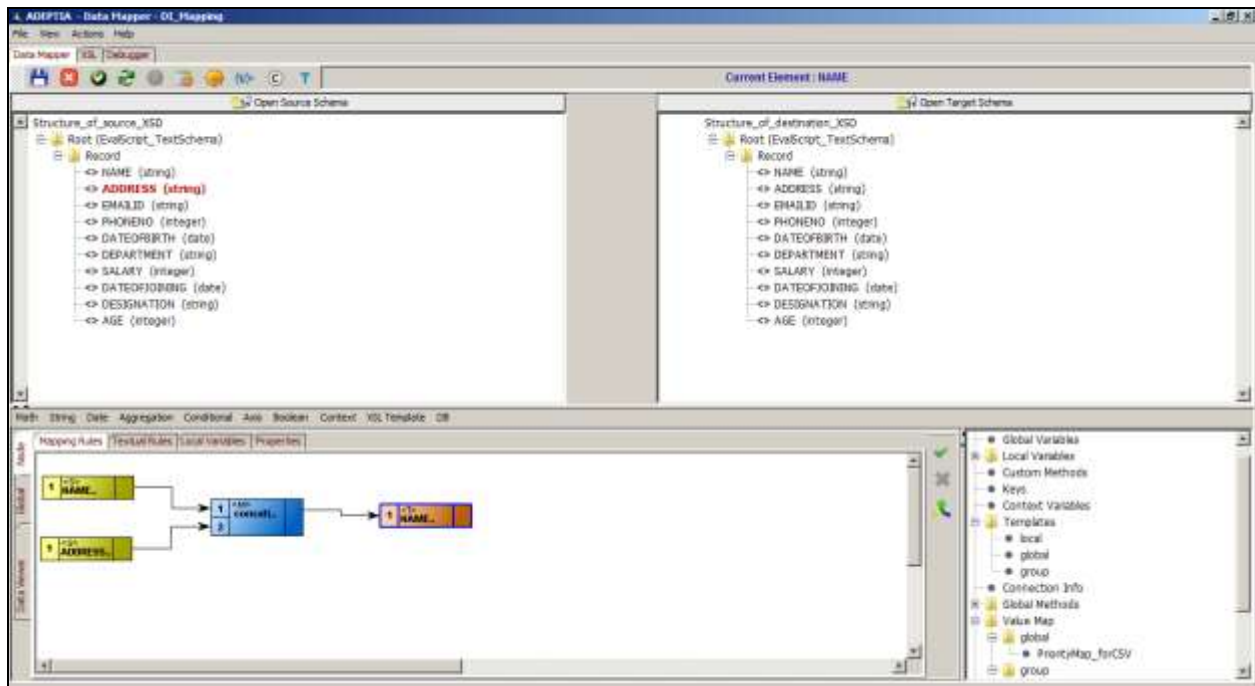
Figure 485: Create Links between Nodes for Mapping Elements using Concat Function

6. Click the **Apply Mapping** ( ) button. This maps elements using the *concat* sub-function. A line is displayed between the source and target panels showing the mapping of the source element to the target element.

Using Date Function

The Date mapping function enables you to map elements by generating dates in specific formats. It also returns the current date and the difference between two dates. It comprises of various sub-functions, which are listed in the table below.

> i All Date functions are applicable, only for XML Schemas at source and target.

Table 14: Sub-Functions of Date Mapping Function

Mapping Function	Sub-Functions	Description	Example
Date	Date-Format	This is a customized mapping function. Changes the date from the input date format to specified output date format.	date-format *(employee/ 1998-03-31, 'yyyy-MM-dd', 'dd-MM-yyyy')* returns 31-03-1998

Mapping Function	Sub-Functions	Description	Example
	Date -Difference	Generates the difference between two dates in milliseconds. Supports all java date formats.	date-difference('12-08-2006','dd-MM-yyyy','12-08-2005', 'dd-MM-yyyy') returns 31536000000
	Current Date	Returns the current system date in Month-day-year format. It accepts the argument according to standard Java arguments as defined for SimpleDateFormat class.	current date ('MM-dd-yyyy') returns the current date in month-day-year format.

You can use the required sub-function of Date mapping function to map elements. The process of using the Date function is the same for all its sub-functions. Thus, the mapping process using one sub- function is outlined below.

Steps to map elements using the 'Date-Difference' Date Mapping Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that the source and target elements to be mapped are selected and displayed in the Mapping Graph Area.

3. You need to add a constant value for using this function. Once it is added, a *Constant* node with its value is displayed in Mapping Graph Area.

> This function requires four inputs. The first input represents the value of *Date1*. The second input represents the value as the format of *Date1*. The third input represents the value as *Date2*. The fourth input represents the value as format of *Date2*. The *Date1* and *Date2* values can either be in the form of constants or XPath values. The formats of *Date1* and *Date2* are however always in the form of constants.

4. Click **Date** mapping function and select **Date-Difference** sub-function. A date-difference node is displayed in the Mapping Graph Area (see Figure 486).
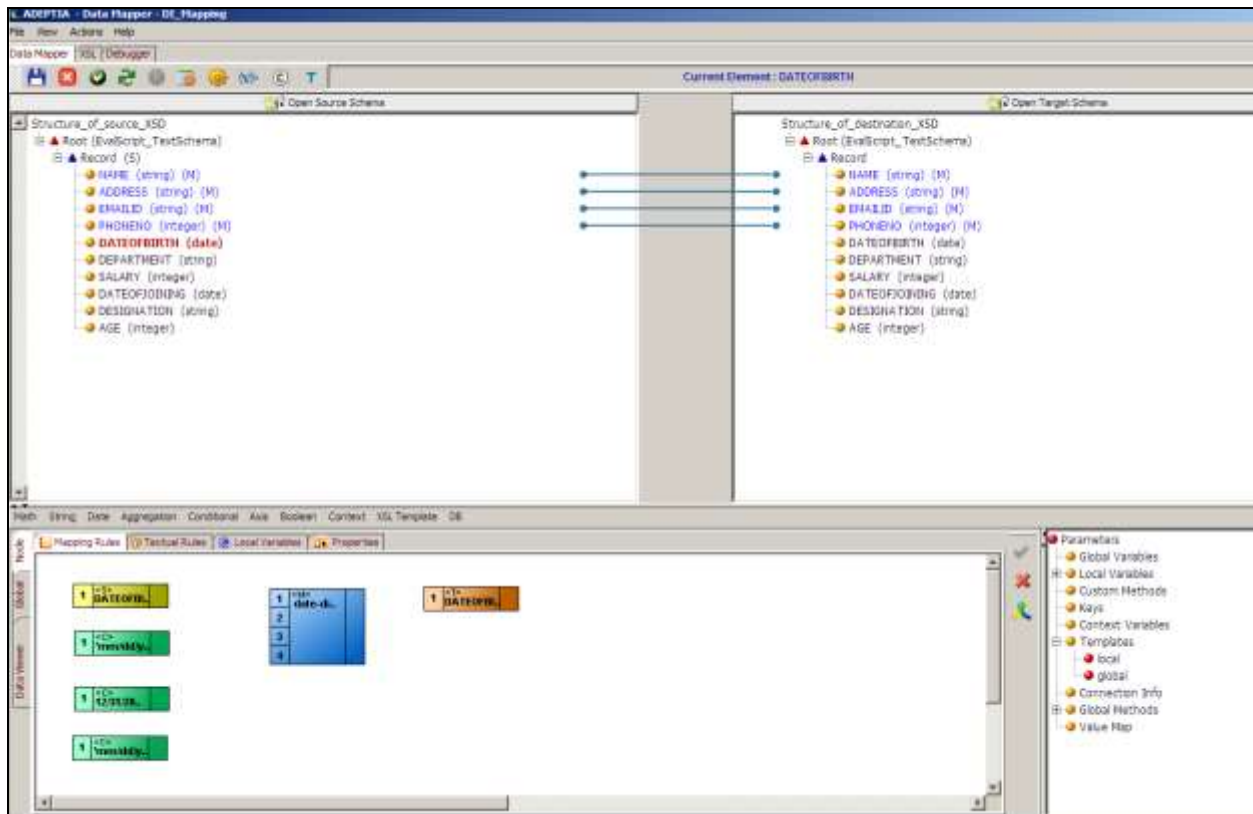
Figure 486: Add Date-Difference Sub-Function Node

5.   Create a link from the output of the first *constant* value to the first input of the *date-difference* node.

6.   Create a link from the output of the second *constant* value to the second input of the *date-difference* node.

7.   Create a link from the output of the third *constant* value to the third input of the *date-difference* node.

8.   Create a link from the output of the fourth *constant* value to the fourth input of the *date-difference* node.

9. Create a link from the output of the *date-difference* node to input of the *target* element node (see Figure 487).
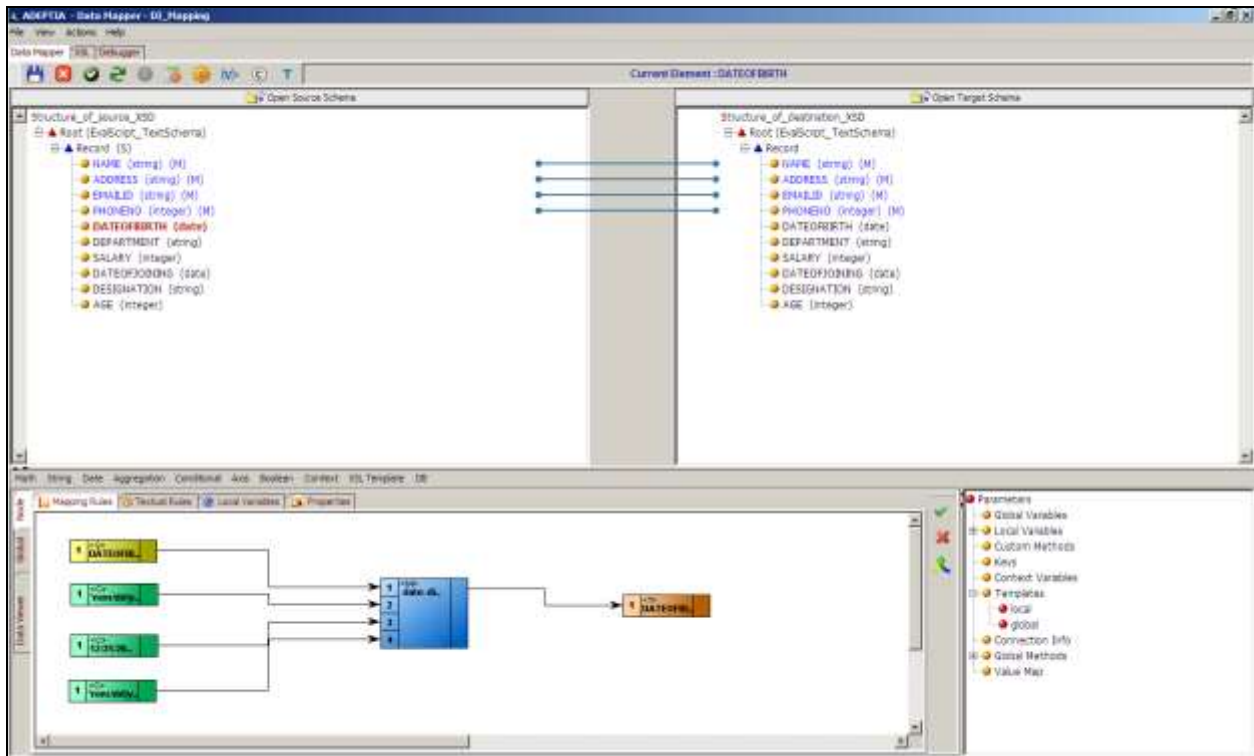
Figure 487: Create Links between Nodes for Mapping Elements using Date-Difference Function

10. Click the **Apply Mapping** ( ) button. This maps elements by generating the difference between *Date1* and *Date2* using the date-difference sub-function.

Using Aggregation Functions

The Aggregation function enables you to map elements by aggregating or counting the values of all nodes in an element. It comprises of various sub-functions, which are listed in the table below.

Table 15: Sub-Functions of Aggregation Mapping Function

Mapping Function	Sub-Functions	Description	Example
Aggregation	Sum	Returns total of all values under all nodes of the specified element.	Sum *(Age)* returns the sum of all Age elements under the specified node.
	Count	Returns the total number of nodes for the specified element.	Count *(Age)* returns the total number of records under the Age element.

Mapping Function	Sub-Functions	Description	Example
	Position	Returns the position of the current context node in the specified element.	*position()* returns 1 for the first node, 2 for second node and so on.
	Key	Returns matched records using two parameters: Name of key to be used Fields to be matched	Refer to the Using Key Function section.

You can use the required sub-function of Aggregation mapping function to map elements. The process of using the Aggregation function is the same for all its sub-functions. Thus, the mapping process using one sub- function is outlined below.

Steps to map elements using the 'Sum' Aggregation Mapping Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that the source and target elements to be mapped are selected and displayed in the Mapping Graph Area.

3. Click **Aggregation** function and select the **Sum** sub-function. A Sum node is displayed in the Mapping Graph Area (see Figure 488).
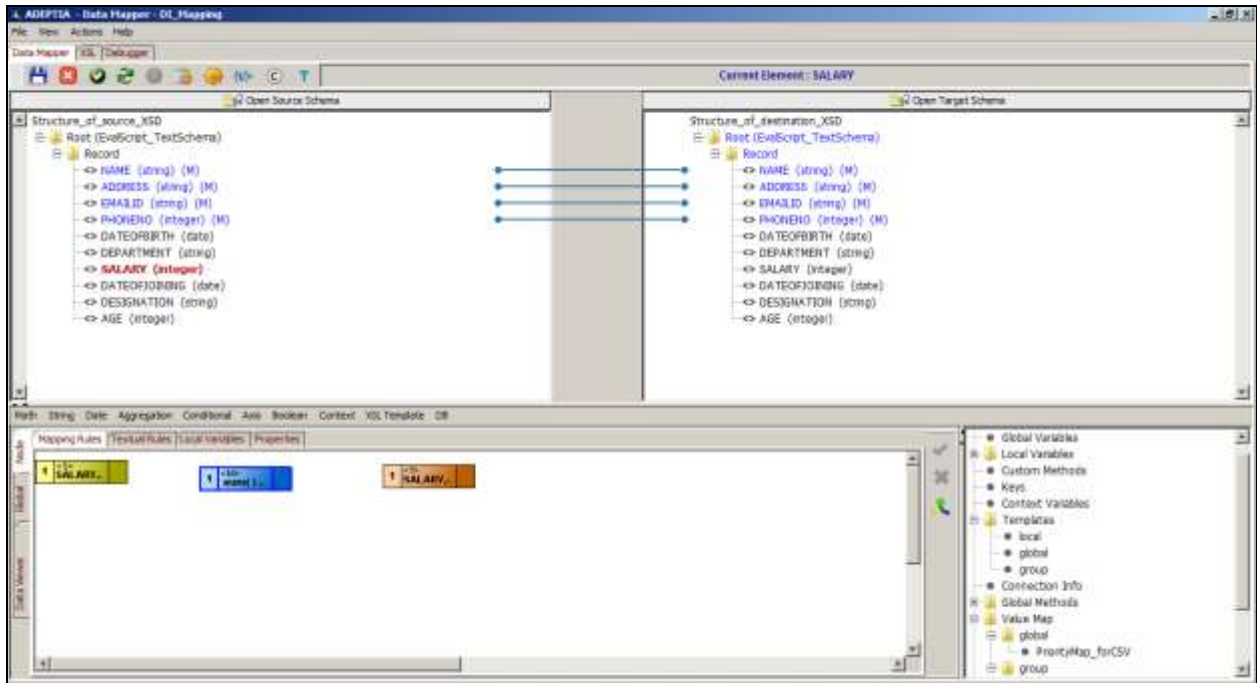
Figure 488: Add Sum Sub-Function Node

4.   Create a link from the output of the *Source* element to the input of the *Sum* node.

5.   Create a link from the output of the *Sum* function node to the *Target* element (see Figure 489).
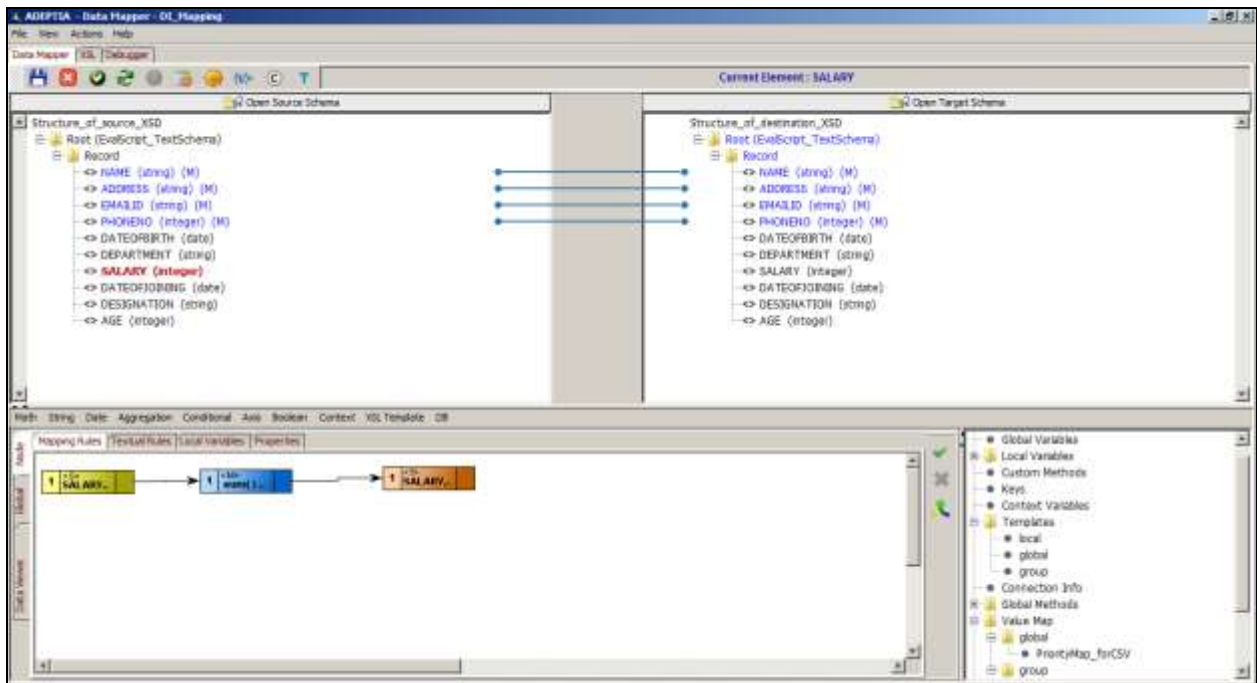
Figure 489: Create Links between Nodes for Mapping Elements using Sum Function

6.   Click the **Apply Mapping** ( ) button. This maps elements using the Sum sub-function. A line is displayed between the source and target panels showing the mapping of the source element to the target element.

Using Conditional Function

The Conditional mapping function enables you to map elements by building conditional expressions. It comprises of various sub-functions, which are listed in the table below.

Table 16: Sub-Functions of Conditional Mapping Function

Mapping Function	Sub-Functions	Description	Example
Conditional	IF Conditions	This function comprises of two sub functions:	
	For Filtering Records	Filters the records/elements on basis of the specified condition.	*IF CONDITION {#Age=25} Value= [100]* Returns the filtered target node-set/node if the Age is 25 in the source record.
	For Mapping To Elements	Returns a value if the specified condition is true.	*IF CONDITION {#Age=25} Value= [100]* Returns 100 if the Age has the value of 25 in the source record.
	When Condition	Returns a particular value if the specified condition is true, else it returns another value.	*WHEN Condition {contains (Email_ID, '@')} Value= [100] Otherwise Value= [200]* Returns 100 if the Email_ID contains @, else it returns 200.
	Select Query	This is a customized mapping function. Returns the output based on the applied select query on a table in the any of the three databases (Oracle, Sql, IBM DB2). Select Query supports single field selection and returns first	*SELECT FIELD = [Value1] FROM DB.TAB = [Value2].[Value3] WHERE {Condition}* Here: Value1 = Field name in the table, whose value is to be retrieved Value 2 = Name of the Database Info object where the table exists. It contains database location and the user ID and password to connect to that database. Value 3 = Name of the table

Mapping Function	Sub-Functions	Description	Example
		matching record.	for which the select query is implemented Condition = Condition, based on which value is returned For example: *SELECT FIELD = [EMPNO] FROM DB.TAB = [oracle_databaseserver].[EMP] WHERE {ENAME= 'Smith'}* Returns Employee number of employee from the table EMP with the name Smith.
	Sequence	This is a customized mapping function. Returns integer values starting from the first argument and incrementing it by the second argument for each record. Both the arguments must be integer constants.	*Sequence {10, 20}* Returns 10, 30, 50….and so on. You can also use multiple where condition. In case of multiple where condition each condition must be within square braces as shown in the example below: *SELECT FIELD = [EMPNO] FROM DB.TAB = [oracle_databaseserver].[EMP] WHERE {[ENAME= 'Smith'] AND [AGE = 28]}*
	Append	This is a customized mapping function. Appends the second string after the first string. Used to append only IF Condition.	*Append ('IF CONDITION {condition} Value [Value1]', ('IF CONDITION {condition} Value [Value2]'* Returns IF CONDITION {condition} Value [Value1] Value [Value2]

Some conditional sub-functions are not included in the Data Mapper screen, but are implemented by extending the 'IF' and 'When' conditions declared in Table 13.14 These sub-functions are listed in Table 13.15.

Table 17: Conditional Functions ('If' and 'When')

Mapping Function	Sub-Functions	Description	Example
IF Condition	Nested IF	Contains IF condition inside the value of previous IF condition. Returns output when all IF conditions are satisfied. For example: IF CONDITION {condition1} VALUE=[IF CONDITION {condition2} VALUE=[IF CONDITION {condition3} VALUE=[Value1]]] Returns Value1 when all IF conditions are satisfied.	*IF CONDITION {#Age=25} Value= [IF CONDITION {#Designation= 'Manager'} Value = IF CONDITION {#Salary= 20000} Value = [100]]]* Returns 100 if all conditions are satisfied such that a manager of age 25 has a salary of 20000.
When Condition	Nested When	Contains When condition inside the value of previous When condition. Returns varied output based on the When conditions being satisfied. For example: WHEN CONDITION {condition1} VALUE=[WHEN CONDITION {condition2} {VALUE=['value1'] OTHERWISE VALUE=['value2']] OTHERWISE VALUE=['value3'] Returns Value1 when both When conditions are satisfied. Returns Value3 when the first When condition fails. Returns Value2 when the first When condition is satisfied, but the second one fails.	*WHEN CONDITION {/employees/employee/Age=25} Value= [WHEN CONDITION {/employees/employee/Designation= 'Manager'} Value = ['100'] OTHERWISE Value = ['200'] OTHERWISE Value = ['300']]* Returns 100 if both conditions are satisfied such that the employee is a manager of age 25. It returns 300 if the employee is a manager but not of 25 years of age. It returns 200 if the employee is 25 years of age, but is not a manager.
IF and When Condition	IF and When conditions return	Returns value based on the function used as whether the condition returns True	*WHEN CONDITION {contains (var1, str)} Value= ['100'] OTHERWISE Value = ['200']*

Mapping Function	Sub-Functions	Description	Example
	Boolean	or False. If a string or source element contains a character or group of characters, then True is returned, else False is returned. Based on the return value of the condition, the output value is generated. For example: WHEN CONDITION {contains (var1, str)} VALUE=[var2] OTHERWISE VALUE=[var3] If var1 contains str, then True is returned, else False is returned. If the condition returns True, then var2 is generated as output, else var1 is the output value.	Returns true if Var1 contains Str, else it returns False. If the condition returns true, then this function returns 100, else it returns 200.
IF and When Condition	Mixed condition	Contains IF condition inside the value part of When condition or vice versa. Returns varied output based on the conditions being satisfied. For example: WHEN CONDITION {condition1} VALUE=[IF CONDITION {condition2} VALUE=['value1']] OTHERWISE VALUE=['value2'] Returns Value1 when both conditions are satisfied. Returns Value2 when the first condition fails. Returns no output when the first condition is satisfied but second condition fails or when	*WHEN CONDITION {/employees/employee/Salary=50000} Value= IF CONDITION {/employees/employee/Designation= Project Manager} Value = ['100'] OTHERWISE Value = ['200']* Returns 100 if the employee is a Project Manager and has a salary of 50000. It returns 200 if the employee is a Project Manager but does not have a salary of 50000.

Mapping Function	Sub-Functions	Description	Example
		both conditions fail.	
IF Condition	Multiple IF	Contains IF conditions placed sequentially, with each IF having its value part. Two IF conditions are appended using Append sub-function of the String Function. Returns varied output based on the condition being satisfied. For Example: IFCONDITION {condition1} VALUE=['value1'] IF CONDITION {condition2} VALUE=['value2'] Returns Value1 if condition1 is satisfied. Returns Value2 if condition2 is satisfied.	*IF CONDITION {#Age=25} Value= ['500'] IF CONDITION {#Designation= 'Manager'} Value = [1000]* Returns 500 if employee is of age 25. It returns 1000 if employee is a Manager.
When Condition	When condition with more than one conditions in it.	Contains When condition containing logical operators like and/not to make multiple conditions inside the When condition. There are many permutations/combinations for this sub-function. Example 1: WHEN CONDITION (cond1 and cond2) Value = ['value1'] otherwise value = ['value2'] Returns Value1 if both conditions are satisfied, else returns Value2. Example 2: WHEN CONDITION (cond1 or cond2) Value = ['value1'] otherwise value = ['value2']	*WHEN CONDITION {/employees/employee/Age=25 and /employees/employee/Designation=Manager} Value= ['100'] OTHERWISE Value = ['200']* Returns 100 if both conditions are satisfied such that the employee is a manager of age 25. Else it returns 200.

Mapping Function	Sub-Functions	Description	Example
		Returns Value1 when either one or both conditions are satisfied, else returns Value2.	
IF Condition	IF condition with more than one conditions in it.	Contains IF condition containing logical operators like and/not to make multiple conditions inside the IF condition. There are many permutations/combinations for this sub-function. Example 1: IF CONDITION (cond1 and cond2) Value = [] Returns Value1 when both conditions are satisfied, else no output is returned. Example 2: IF CONDITION (cond1 or cond2) Value = [] Returns Value1 when either one or both conditions are satisfied, else no output is returned.	*IF CONDITION {/employees/employee/Age=25 and /employees/employee/Designation=Manager} Value= ['100']* Returns 100 if both conditions are satisfied such that the employee is a manager of age 25. Else it returns 200.

You can use the required sub-function of Conditional mapping function to map elements. The process of using the Conditional function is the same for all its sub-functions. Thus, the mapping process using one sub- function is outlined below.

Steps to map elements using the 'IF' Condition (IF CONDITION {} VALUE=[]) Conditional Mapping Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that the source and target elements to be mapped are selected and displayed in the Mapping Graph Area.

3. Click **Boolean** function menu and then select the **>=Greater than Equal** operator. A >= node is displayed in the Mapping Graph Area (see Figure 490).
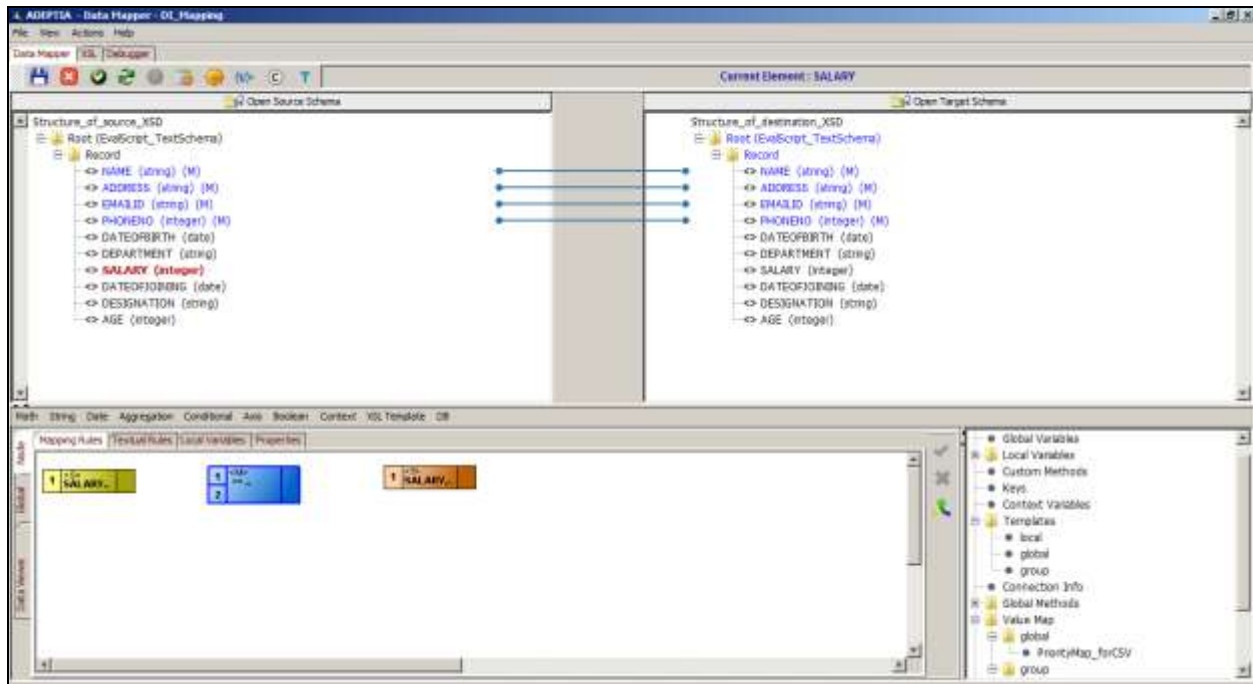
Figure 490: Add Greater Than or Equal To Boolean Function Node

> To learn more about Boolean Functions, refer to the section Using Boolean Functions.

4. Add a constant value in the Mapping Graph Area.

5. Create a link from the output of the *source* element to the first input of the >= operator node.

6.   Create a link from the output of the *Constant* node to the second input of the *>=* operator node (see Figure 491).
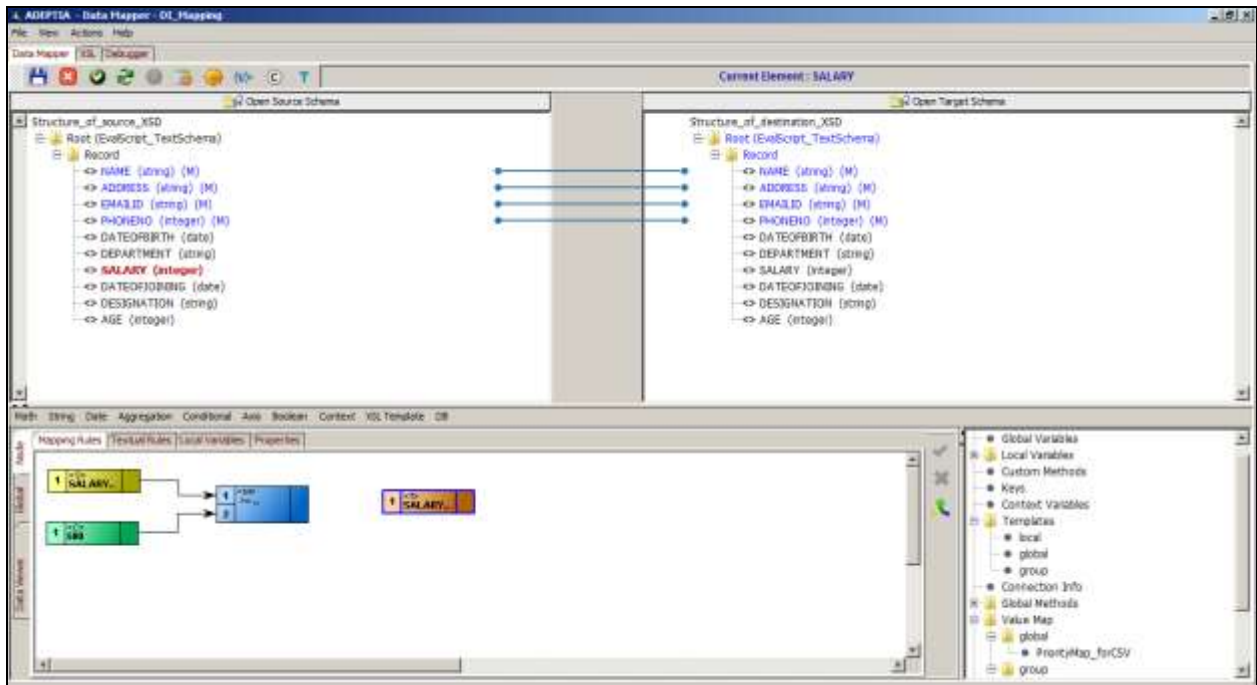
Figure 491: Create Links between Nodes for Mapping Elements using Greater Than Equal To Function

7.   Click **Conditional** mapping function and select **IF CONDITION** sub-function. Further select For Mapping to Elements option. An *IF CONDITION* node is displayed in the Mapping Graph Area (see Figure 492).
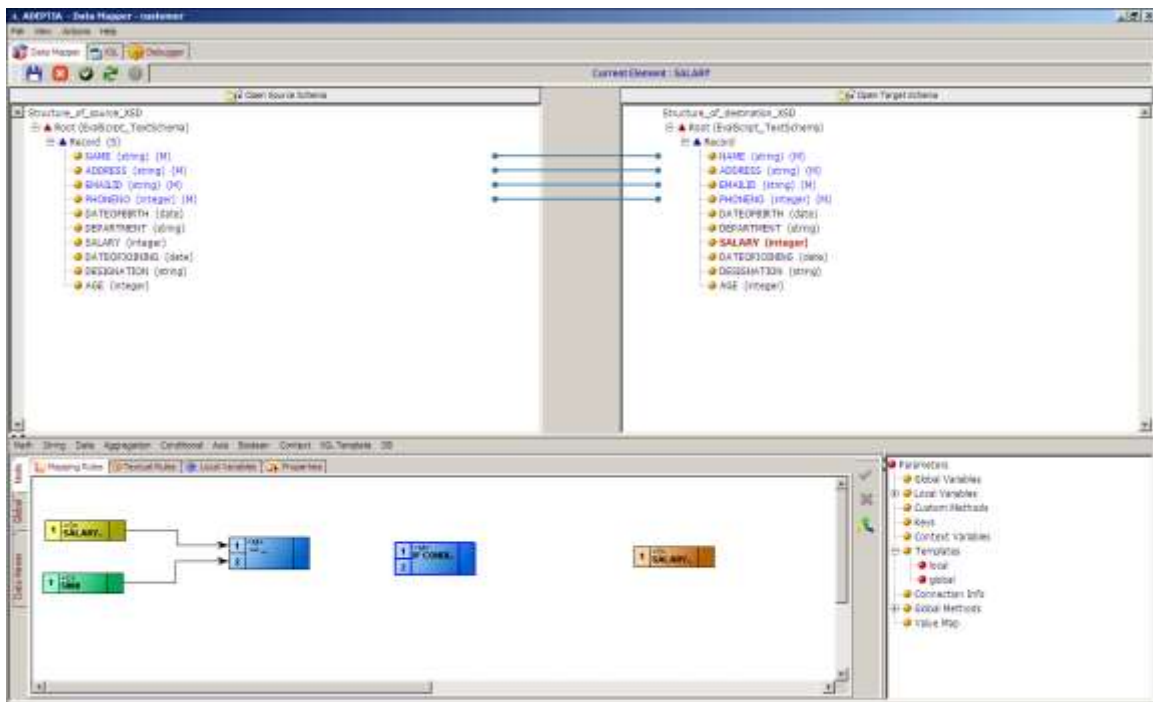
Figure 492: Add IF Conditional Function Node

8.   Create a link from the output of the *>=* operator element to the first input of the *IF CONDITION* node.

9.   Add a constant value of integer type (for example, 25) in the Mapping Graph Area.

10. Create a link from the output of the *Constant* element to the second input of the *IF CONDITION* node.

11. Create a link from the output of the *IF CONDITION* node to the input of the *target* element node (see Figure 493).
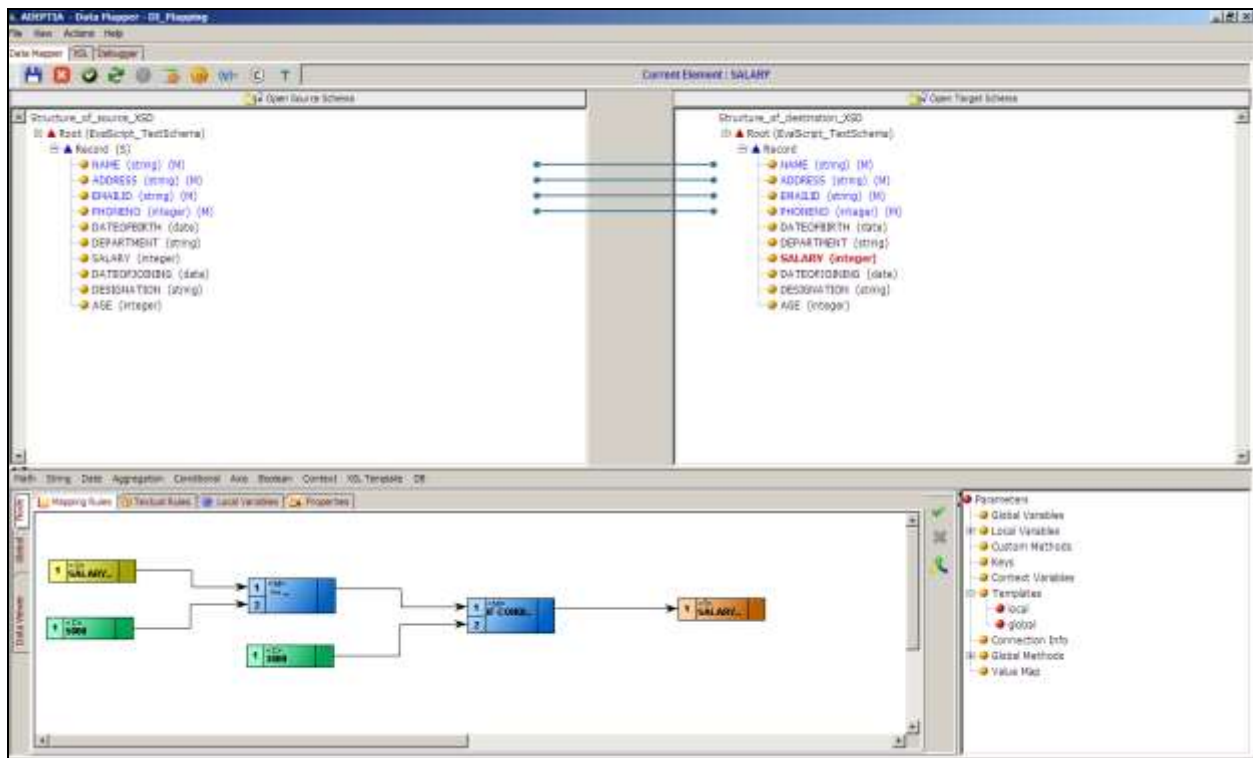
Figure 493: Creating Links between Nodes for Mapping Elements using IF Conditional Function

> ℹ️ If the value of *SALARY* element in the source data is greater than or equal to 5000, output will be 3000. If the value of *TESTCASENO* element in the source data is less than 100, output will be an empty tag.

12. Click **Apply Mapping** (✔) button. This maps elements using IF CONDITION function. A line is displayed between source and target panels showing the mapping of the source element to the target element.

> ℹ️ This function simply filters the records based on the specified Boolean condition, but it does not create a data stream of the filtered records. You need to explicitly create the filtered data stream by creating another mapping (or adding same output schema in Target Panel) and using the IFF CONDITION () function based on the opposite Boolean condition.

Using Axis Function

The Axis function contains a list of advance XSL functions that are used to map elements only when the For Each function is applied on the Target node. It comprises of various sub-functions, which are listed in the table below.

Table 18: Sub-Functions of Axis Mapping Function

Mapping Function	Sub-Functions	Description	Example
Axis	File Path – XPath	This is a customized mapping function. This is an XML Lookup which returns the value of the element/attribute within the XML file whose path is specified. The File path and XPath must be specified in single quotes.	FilePath ['C:/correct_file.xml'] XPath {'/employees/employee/Name'} Returns value of Name element from the file correct_file.xml.
	Self	Returns the element which is the context node itself.	Self::Employee Returns Employee which is the context node itself.
	Child	Returns the element which is the child of the context node.	Self::Name Returns Name which is a child of the context node.
	Parent	Returns the element, which is the parent (if any) of the context node.	Parent::Name Returns Name which is a parent of the context node.
	Following-sibling	This axis contains all the following siblings of the context node. It returns the first occurrence of the element/attribute in the next sibling of the context node. If the	following-sibling: employee/Name Returns the first occurrence of Name in the next employee node.

Mapping Function	Sub-Functions	Description	Example
		context node is an attribute node or namespace node, then this axis is empty.	
	Ancestor	Returns the element which is the ancestor of the context node. This axis always includes the root node, unless the context node is the root node.	*Parent::Name* Returns Name which is an ancestor of the context node.
	Ancestor-or-self	This axis contains the context node and the ancestors of the context node. It always includes the root node. It returns the context node or ancestors of the context node.	*ancestor-or-self::employees/@val* Returns context node or ancestors of context node.
	Preceding-sibling	This axis contains all the preceding siblings of the context node. It returns the first occurrence of the element/attribute in the preceding sibling of the context node. If the context node is an attribute node or namespace node, then this axis is empty.	*preceding-sibling: employee/Name* Returns the first occurrence of Name in the previous employee node.
	Descendant	Returns the element which is	*descendant::Name*

Mapping Function	Sub-Functions	Description	Example
		the descendant of the context node. This axis does not contain attribute nodes.	Returns Name, which is a descendant of the context node.
	Descendant-or-self	This axis contains the context node and the descendants of the context node. It returns the context node or descendants of the context node.	*descendant-or-self::employees/salary* Returns context node or descendants of context node.
	Generate-id	Generates a unique id for the element/attribute specified by the XPath argument.	*generate-id (employees/employee/Name)* Returns unique ID for Name element
	Current	Removes all tags from the specified xml file and returns the data.	*current()* Returns data of the xml file without tags.

You can use the required sub-function of Axis mapping function to map elements. The process of using the Axis function is the same for all its sub-functions.

Using Boolean Function

The Boolean mapping function enables you to map elements by applying various logical operators in building Boolean expressions. It comprises of various sub-functions, which are listed in the table below.

Table 19: Sub-Functions of Boolean Mapping Function

Mapping Function	Sub-Functions	Description	Example
Boolean	Equal	Returns TRUE the first variable argument is equal	*(5) = (5)* returns true

Mapping Function	Sub-Functions	Description	Example
		to the second variable argument.	
	Not Equal	Returns TRUE the first variable argument is not equal to the second variable argument.	*(5) != (50)* returns true
	Greater Than	Returns TRUE the first variable argument is greater than the second variable argument.	*(5)> (3)* returns true
	Less Than	Returns TRUE the first variable argument is less than the second variable argument.	*(5) < (8)* returns true
	Greater than Equal	Returns TRUE the first variable argument is greater than or equal to the second variable argument.	*(5)>= (5)* returns true *(5)>= (3)* returns true
	Less than Equal	Returns TRUE the first variable argument is less than or equal to the second variable argument.	*(5) <= (8)* returns true *(5) <= (5)* returns true
	Or	Returns TRUE if either of the two variable arguments evaluate to TRUE otherwise FALSE. These variable	*(True) Or (True)* returns true *(True) Or (False)* returns true

Mapping Function	Sub-Functions	Description	Example
		arguments can only be of Boolean data type. Hence, their value can either be TRUE or FALSE only.	
	And	Returns TRUE if both of the two variable arguments evaluate to TRUE otherwise FALSE. These variable arguments can only be of Boolean data type. Hence, their value can either be TRUE or FALSE only.	*(True) And (True)* returns true *(True) And (False)* returns false

A Boolean sub-function is always used in conjunction with a Conditional function. Thus for the process of using the Boolean function, refer to Steps to map elements using the IF Conditional Mapping Function.

Using Context Functions

The Context mapping function enables you to map elements by setting or getting value of process flow context variables. It comprises of various sub-functions, which are listed in the table below.

Table 20: Sub-Functions of Context Mapping Function

Mapping Function	Sub-Functions	Description	Example
Context	Set-Context	This is a customized mapping function. Sets the value of the specified variable argument in the process flow context. This value can be string constant, numeric constant, XPath or output of limited set of mapping function, which can be used before set-context function. This function does not return a value. If mapped to a target element, it creates an empty tag of that target element in output	*set-context ('index', '123')* sets the value of index variable as 123 in the process flow.

Mapping Function	Sub-Functions	Description	Example
		XML.	
	Get-Context	This is a customized mapping function. Returns the value of the specified variable argument from process flow Context. This value can be string constant, numeric constant, XPath or output of limited set of mapping function. If no value has been set, then the value specified in the second argument is returned.	*get-context ('index', '100')* Returns the value of index variable from the process flow. If no value has been set for index, then 100 is returned. In get-context function you can also use any variable, which is not declared. In such case get-context creates a variable with the specified name and value, which can be further used with the selected target element. This can be done only in Textual Rule panel.

You can use the Set-Context sub-function of Context mapping function to set value of the process flow variable and send it to the Process Designer. The Get-Context sub-function is used to return the value of the process flow variable.

Using Set-Context Function

You can use the Set-Context Function in various ways. These are outlined as:

- Mapping Set-Context function using local variable
- Global declaration of Set-Context function
- Mapping Set-Context function to any target element

Mapping Set-Context function using local variable

Concept

You can map the Set-Context function to a local variable, when you want to set the value of process flow context variable based on output of a mapping function or condition. You can pass the output of mapping function or condition to a local variable and use that local variable as value of set-context function.

For example, if you want to set the value of process flow context variable based on the output of WHEN condition. The WHEN condition is used to return "True" when value of a source element "SALARY" is greater than 8000, else it will return "False". The output of WHEN condition is mapped to a local variable "*BolSalary8K*". To set the value of "BolSalary8K" to the process flow context variable, you can use Set-Context function. You have to create another local variable "*Var1*", where value of process flow context variable "*ContextVar*" is set using Set-Context function. This is done by mapping Set-Context to the value part of the local variable *"Var1"*. The first argument of the Set-Context function is the name of the process flow context variable "*ContextVar*" and second argument is the local variable "*BolSalary8K*", which contains the output of WHEN condition.

Advantages

- Need not be mapped to a target element
- Local variable can be used as second argument of Set-Context function
- XPath of a source element can be used as second argument of Set-Context function
- Set-Context function is executed for each record of the source data

Disadvantages

- Local Variable used to map set-context function will have an empty value.

Map Set-Context Function using Local Variable

Steps to pass output of mapping function or condition to a local variable

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click **Node** tab displayed in the Mapping Graph Area. All tabs of the Node tab are displayed.

3. Click the **Local Variables** tab. The Local Variable pane is displayed. (refer to Figure 527).

4. Click any *target* element to declare the local variable in the Local Variable pane.

5. Click **Local Variable Name** text field and enter the name of the local variable you want to create (e.g. BolSalary8K). Press the **Tab** or **Enter** key. This takes the control to the Local Variable Value field.

6. Enter the value of the local variable in the **Local Variable** Value field. In this example, you have to specify the WHEN condition as displayed in Figure 494.
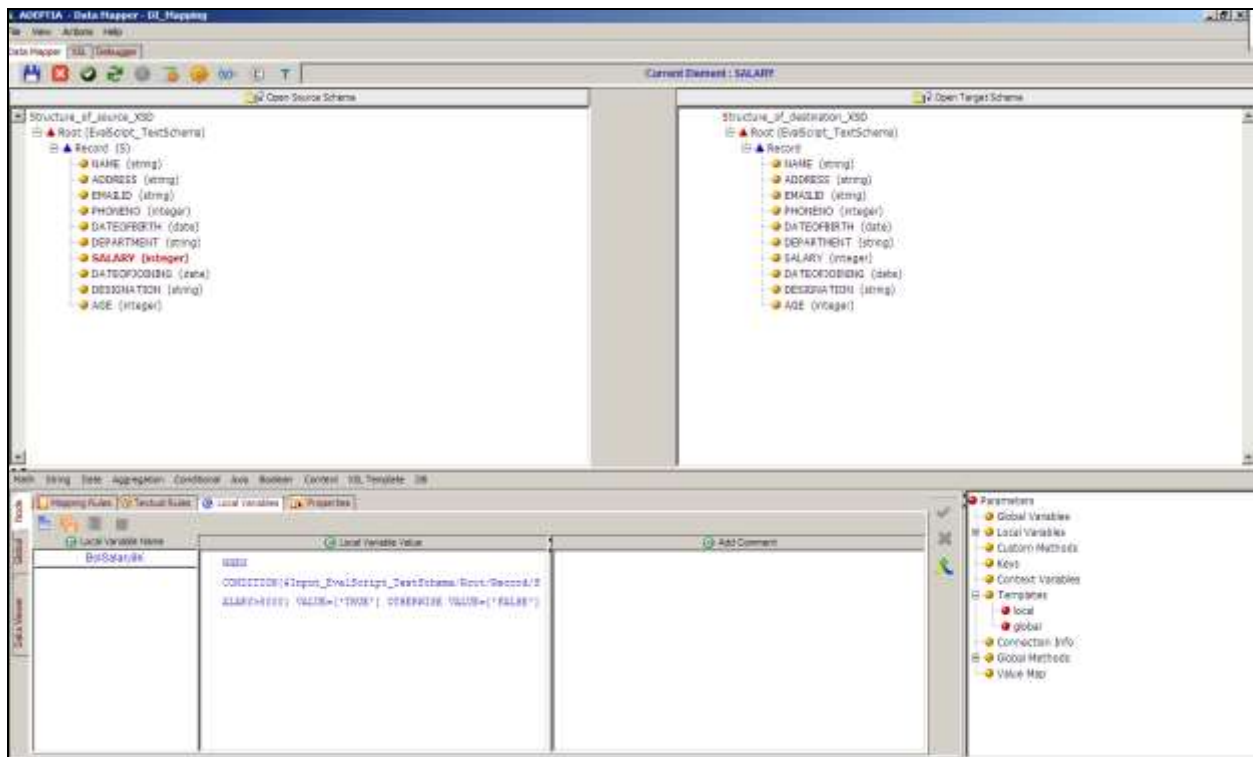
Figure 494: Create Local Variable

7. Click the **Save Local Variable** ( ) button to save the declared local variable.

Steps to map Set-Context function using local variable

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of the **Node** tab are displayed.

3. Click the **Local Variables** tab. The Local Variable pane is displayed. (refer to Figure 527).

4. Click any *target* element to declare the local variable in the Local Variable pane.
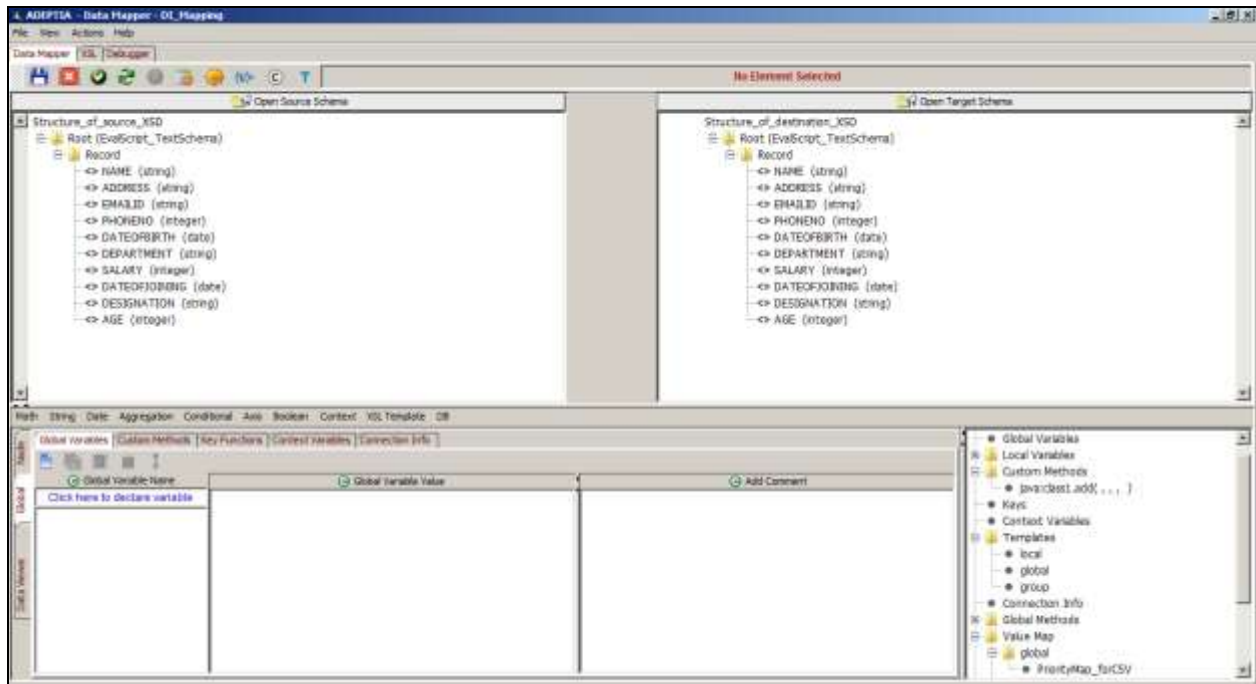
5. Click **Local Variable Name** text field and enter the name of the local variable you want to create (e.g. Var1). Press the **Tab** or **Enter** key. This takes the control to the **Local Variable Value** field.

6. Click **Context** mapping function menu and select **Set-Context** sub-function. Syntax for Set-Context function is displayed in **Local Variable Valu***e* field.

7. Enter the process flow variable name you want to create (e.g. *ContextVar*) in the first argument of the *Set-Context* function.

8. Enter the value of the variable in the second argument of the *Set-Context* function (see Figure 495).

> Second argument can be string constant, integer constant, XPath, local variable or output of limited set of mapping function, which can be used before Set-Context function. In this
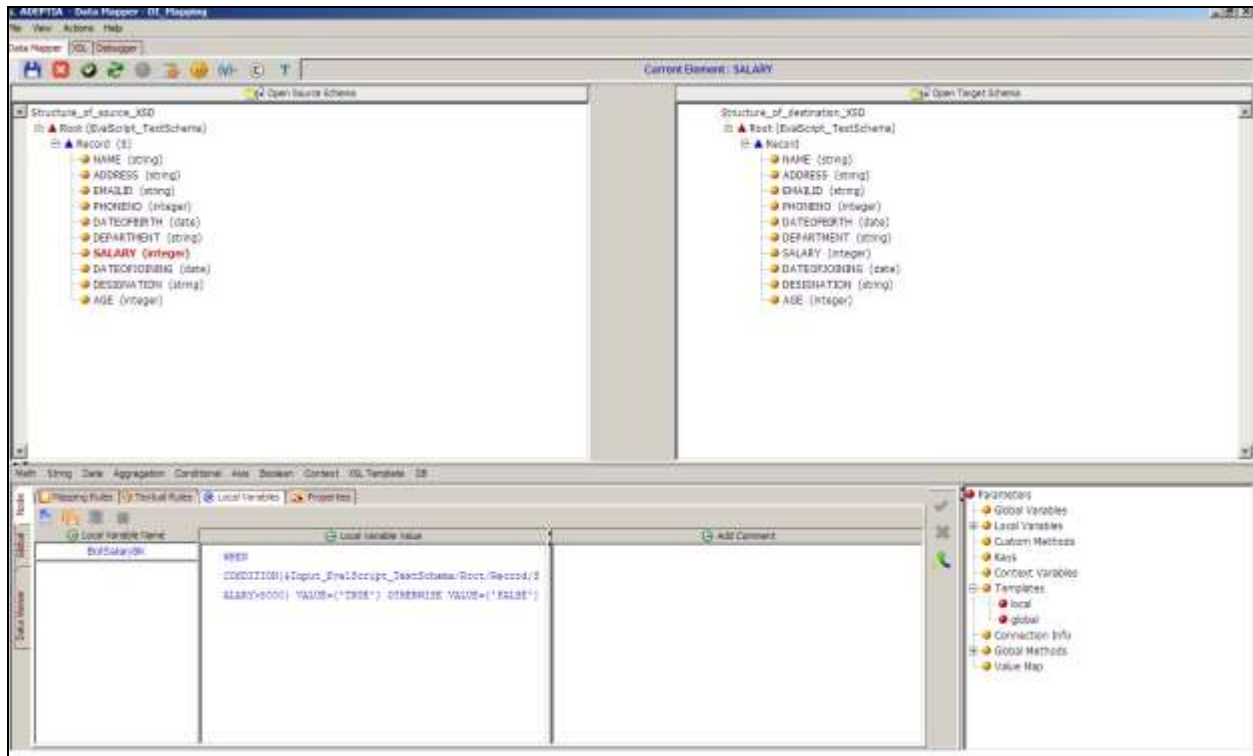
Figure 495: Mapping Set-Context to Local Variable

9.   Click **Save Local Variable** ( ) button to save the declared local variable.

Global Declaration of Set-Context Function

Concept

Another way of using the Set-Context function is to declare it globally. When doing this, you need not map it to a target element or local variable.

Advantages

- Easy to use
- Need not be mapped to a target element
- Need not create any local variable

Disadvantages

- Local variable cannot be used in value part of Set-Context function
- If XPath of a source path is used, Set-Context function is executed for the first record only.

Declare Set-Context Function Globally

Steps to declare Set-Context function globally

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Global** tab displayed in the Mapping Graph Area. All tabs of the **Global** tab are displayed.

3. Click the **Context Variables** tab. The Context Variables pane is displayed (see Figure 496).
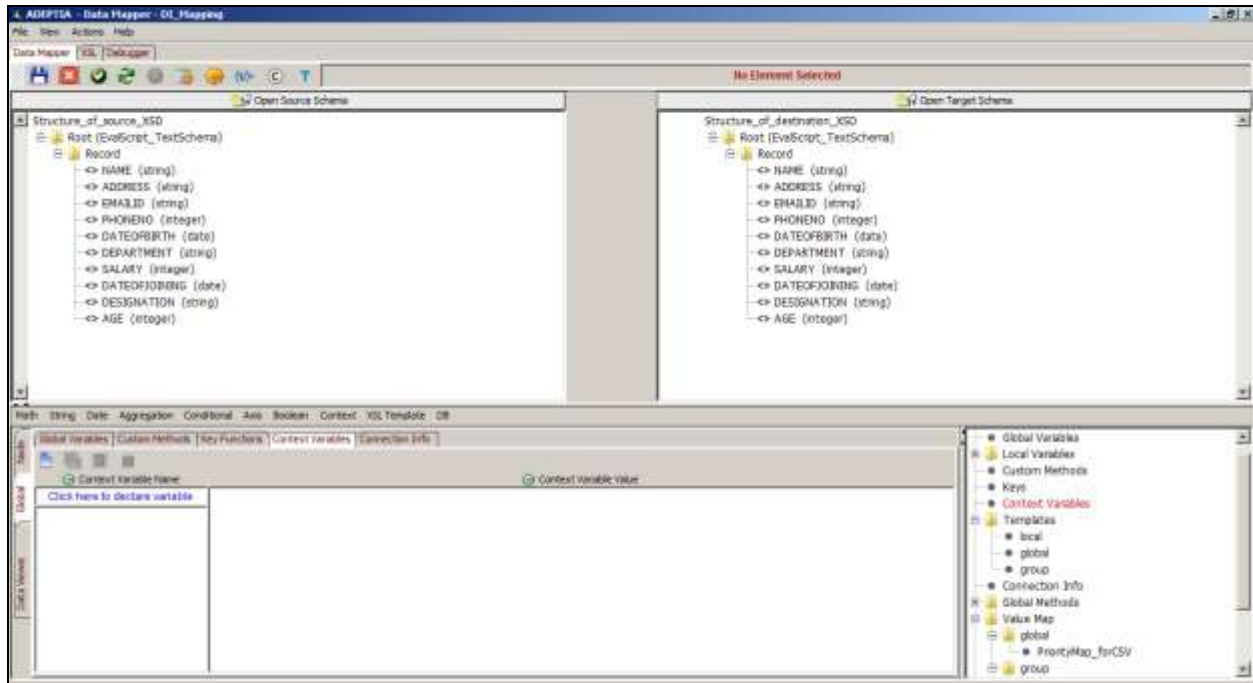
Figure 496: Context Variables Pane

4. Click the **Context Variable Name** text field and enter the name of process flow context variable you want to create (e.g. *Var1*) Press the **Tab** or **Enter** key. This takes the control to the **Context Variable Value** field.

5. Enter the value of process flow context variable in the **Context Variable Value** field (see Figure 497).
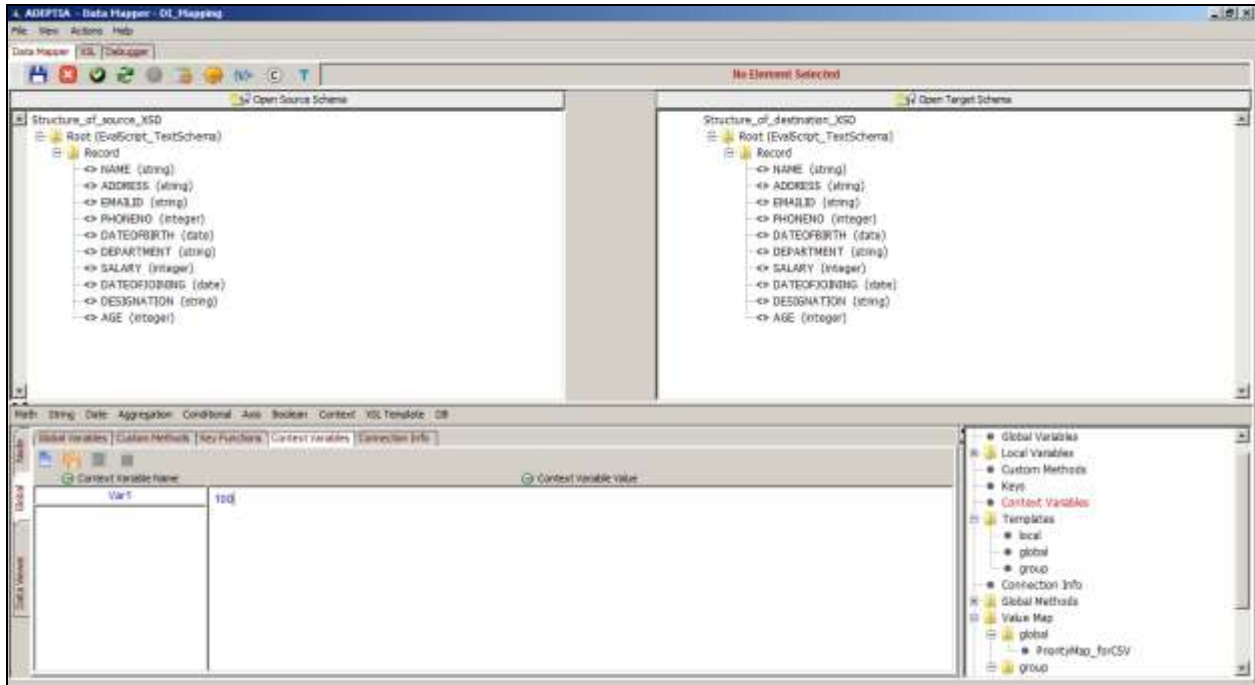
Figure 497: Enter Context Variable Value

6. Click the **Save Context Variable** ( ) button to save the declared process flow context variable. This context variable is added to the list of existing context variables in the **Context Variables** tab. It is also displayed under Context Variables in the Parameters Panel. If you shift focus to another node, or click any of the Mapping Rules, Textual Rules, Node, Properties, *XSL* or *Debugger* tabs, without saving the context variable, an alert message is displayed (refer to Figure 522).

7. Click **No** to save the context variable and shift focus to the other object. If you click **Yes**, then the defined context variable is cleared and the focus is shifted to the other object.

> You can also set the value of a context variable that is used in a particular condition. For example, if the context variable *Var1* is used in an IFF condition in such a way the value of Var1 depends on the condition being True or False. If it is True then *Var1* will have a different value. You can set this value of Var1 if the condition is True, using the Set Context function.
>
> Similarly, you can retrieve the value of a context variable used in a particular condition, if the condition is True.

> You can edit or delete a context variable from the Parameters Panel itself. For details, refer to the Managing a Global Variable from Parameter Panel section.

Mapping Set-Context function to any target element

Concept

You can map the Set-Context function to a target element. Since this function does not return a value, it will create an empty tag of that target element in output XML. Thus, it is recommended that you should map the Set-Context function to a target element, whose value is not required at the target end.

Advantages

- Need not to create any local variable
- Executed for each record

Disadvantages

- Need an additional target element, whose value is not required at the target end

Map Set-Context Function to a Target Element

Steps to map Set-Context function to a target element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Select the target element that you want to map with Set-Context function.

3. Click **Context** mapping function menu and select **Set-Context** sub-function. A set-context node is displayed in the Mapping Graph Area (see Figure 498).
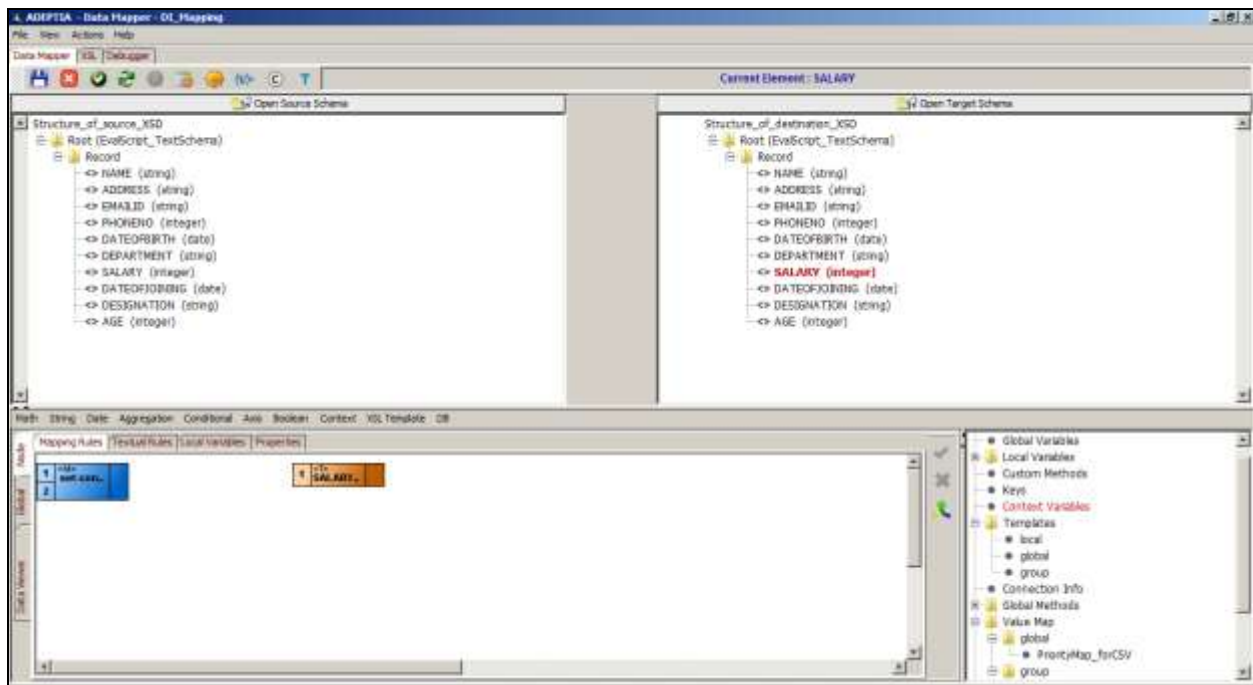
Figure 498: Set-Context Node

4. Add a constant node with the name of variable (e.g. *index*), whose value is to be set in the process flow context.

5. Create a link from the output of the *constant* node (*index*) to the first input of the *set-context* node.

6. Add another constant node for the second argument (e.g. 100) of the *set-context* function.

> Second argument can be string constant, integer constant, XPath, local variable or output of limited set of mapping function, which can be used before Set-Context function.

7. Create a link from the output of second *constant* node (*100*) to the second input of the *set-context* node.

8. Create a link from the output of the *set-context* node to the *target* element (see Figure 499).
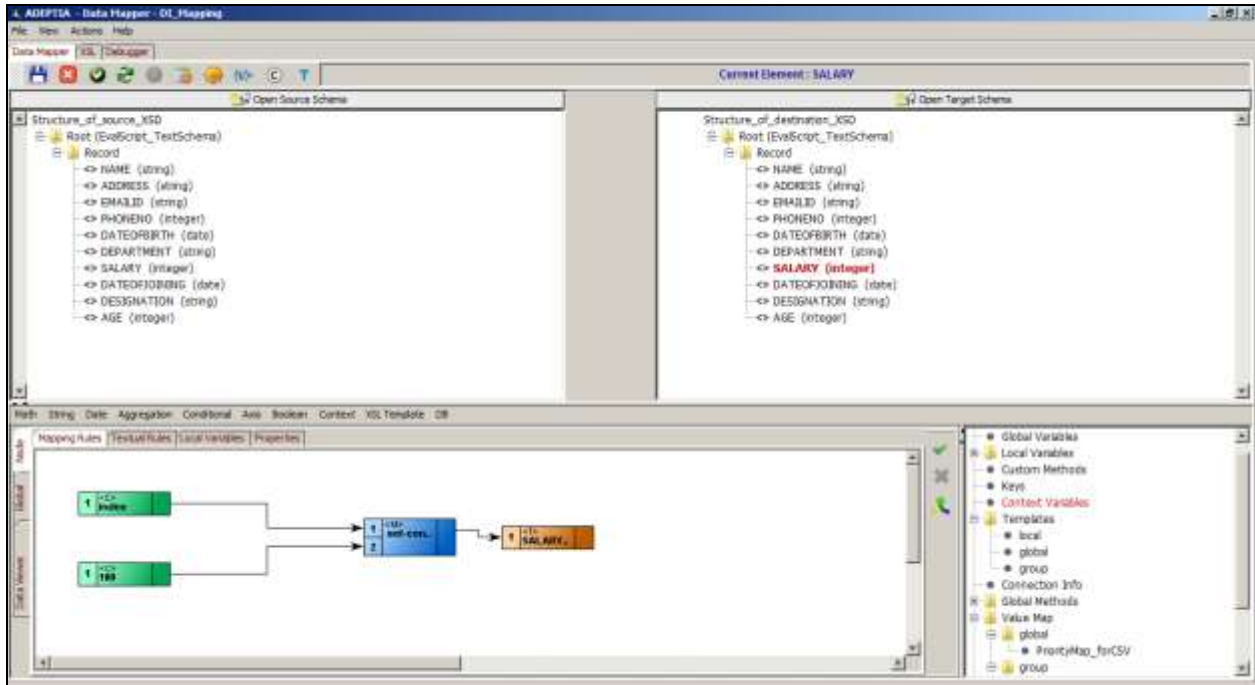
Figure 499: Create Links between Nodes for Mapping Set-Context Function to Target Element

9. Click the **Apply Mapping** ( ) button. This maps the Set-Context function to the target element. The defined variable (*index*) is passed to the process flow with the value 100. If you shift focus to another node, or click any of the *Mapping Rules*, *Textual Rules*, *Node*, *Properties*, *XSL* or *Debugger* tabs, without applying the mapping, an alert message is displayed (refer to Figure 522).

10. Click **No** to apply the mapping and shift focus to the other object. If you click **Yes**, then the mapping activity is cleared and is replaced by the previous mapping in the Mapping Graph Area and the focus is shifted to the other object.

> ℹ️ At times the mapping is too large and the applet memory may exceed 256M. In such cases, the mapping will fail and return an error of insufficient memory. You can overcome this situation by increasing the applet memory. For details, refer to *Appendix A* in the *Administrator Guide*.

Using DB Function

The DB function enables you to get data from the database, based on a condition. It comprises of a sub-function, which is listed in the table below.

Table 21: Sub-Function of DB Mapping Function

Mapping Function	Sub-Functions	Description	Example
DB	DBQuery	Returns data from the database, based on a query.	*DBQuery('select EmpID from EMP where EMPID=1035', var1, 'true')* returns all the records

Mapping Function	Sub-Functions	Description	Example
			from the EMP table, where EMPID is 1035. Here, 'var1' is the Connection Info variable. If you change the last boolean argument from *true* to *false*, only the first record is returned.
	PreparedQuery	Returns data from the database, based on a query.	*PreparedQuery ('SELECT EMPID FROM EMP WHERE EMPNAME=? AND EMPCITY=? AND EMPISMALE=?, $oracle_databaseserver, true ,('Smith','Chicago','true')').* Here, '=?' is the variable name that you pass in the braces. The '$oracle_databaseserver' is the name of the Connection Info variable. If you change the last boolean argument from *true* to *false*, only the first record is returned.

You can use this sub-function of DB mapping function to get data from the database. The process of using this sub-function is outlined below.

Steps to get data from the database using the 'DBQuery' DB Mapping Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that a *Connection Info* variable is created for the DBQuery and is listed in the Parameters Panel.

> For details on creating a Connection Info variable, refer to the Declaring Connection Info Variable section.

3. Double-click the target element that you want to map with the DBQuery. It is displayed in the Mapping Graph Area.

4. Click the **DB** function and select the **DBQuery** sub-function. A DBQuery node is displayed in the Mapping Graph Area (see Figure 500).
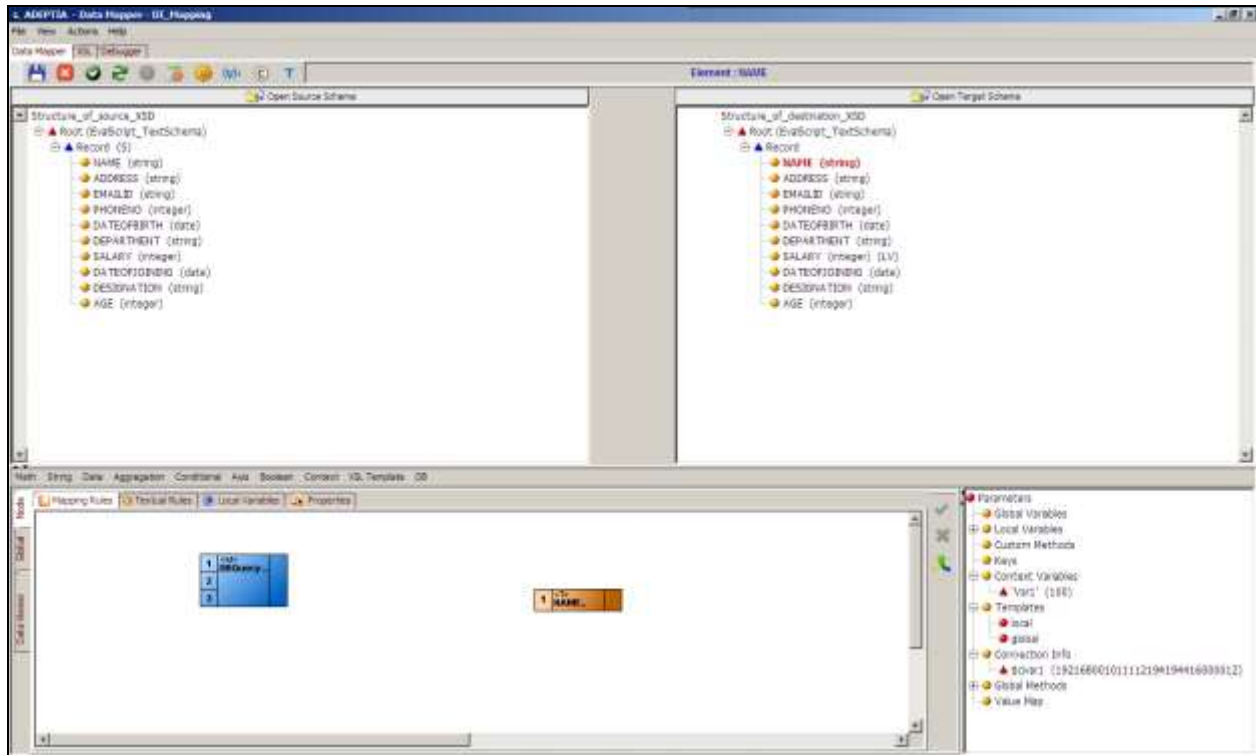
Figure 500: Add DBQuery Sub-Function Node

5. [Add a constant node](#) with the query for searching data from the database based on the specified condition (e.g. *select Name from EMP where designation= 'Manager'*).

6. Create a link from the output of the *constant* node to the first input of the *DBQuery* node.

7. Double-click the required *Connection Info* variable under Connection Info in the Parameters Panel. The selected Connection Info variable node is displayed in the Mapping Graph Area (see Figure 501).
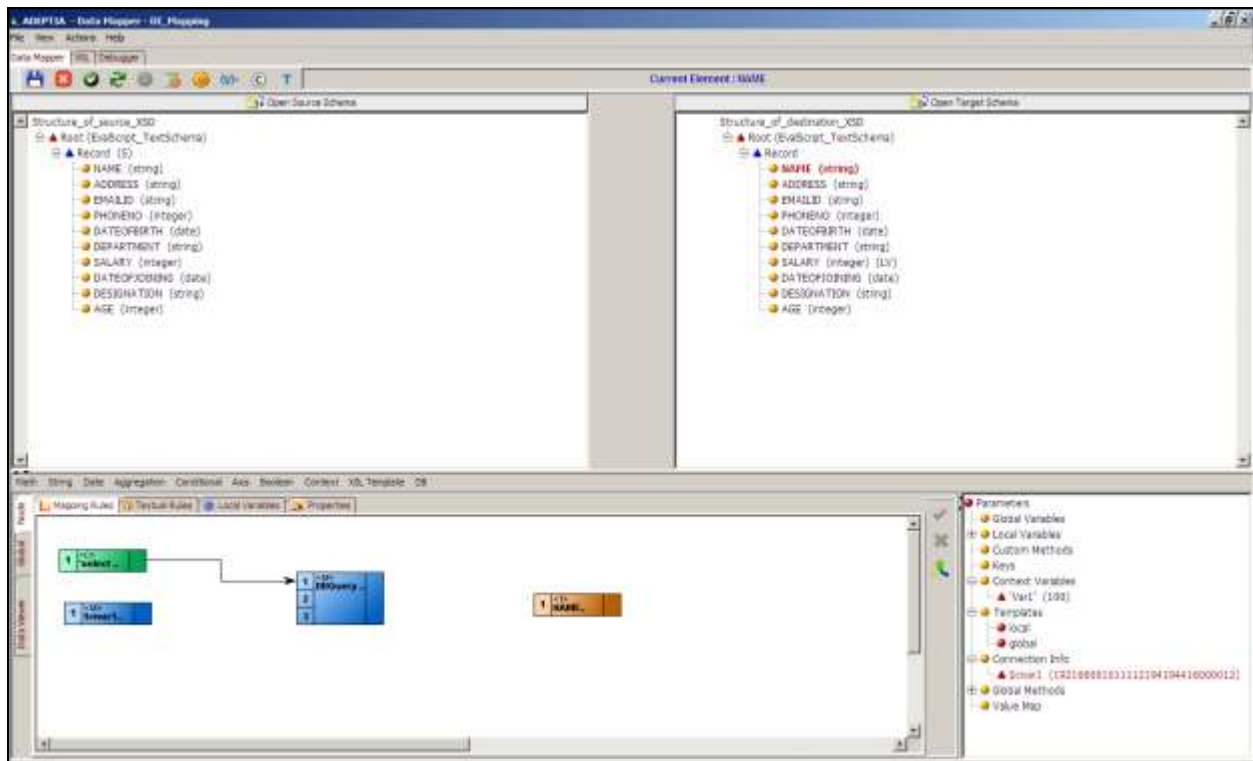
Figure 501: Connection Info Variable in Mapping Graph Area

8. Create a link from the output of the *Connection Info* variable to the second input of the *DBQuery* node.

9. [Add another constant node](#) for the third argument of the *DBQuery* function. This is a Boolean value as true or false.

10. Create a link from the output of this *constant* node to the third input of the *DBQuery* node.

11. Create a link from the output of the *DBQuery* node to the input of the *target* element (see Figure 502).
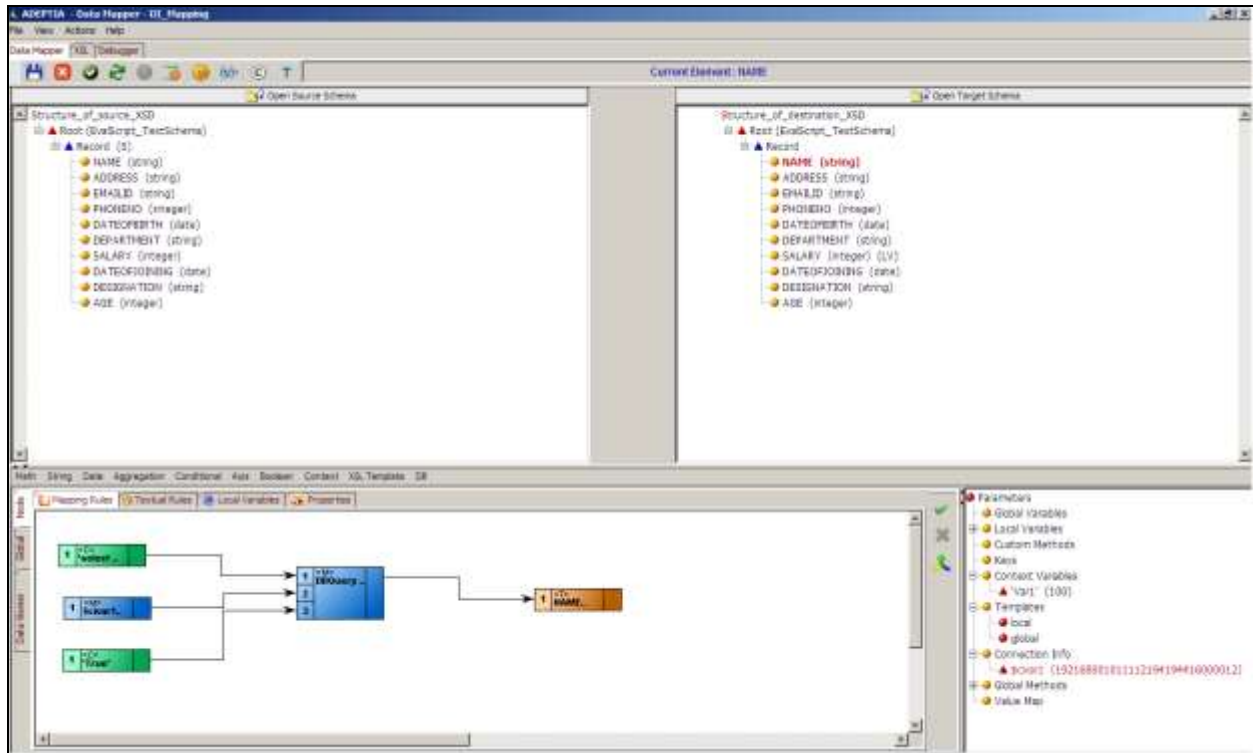
Figure 502: Create Links between Nodes for Mapping DBQuery Function to Target Element

12. Click the **Apply Mapping** ( ) button. This maps the DBQuery function to the target element. The defined query is passed to the database where a connection is created using the Connection Info variable. If the Boolean value is set as 'True' then the database fetches all the values that match the query. If the value is 'False', then the database fetches only the first matching value. If you shift focus to another node, or click any of the *Mapping Rules*, *Textual Rules*, *Node*, *Properties*, *XSL* or *Debugger* tabs, without applying the mapping, an alert message is displayed (refer to Figure 522).

13. Click **No** to apply the mapping and shift focus to the other object. If you click **Yes**, then the mapping activity is cleared and is replaced by the previous mapping in the Mapping Graph Area and the focus is shifted to the other object.

> At times the mapping is too large and the applet memory may exceed 256M. In such cases, the mapping will fail and return an error of insufficient memory. You can overcome this situation by increasing the applet memory. For details, refer to *Appendix A* in *Administrator Guide*.

Steps to get data from the database using the 'PreparedQuery' DB Mapping Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that a *Connection Info* variable is created for the PreparedQuery and is listed in the Parameters Panel.

> For details on creating a Connection Info variable, refer to the Declaring Connection Info Variable section.

3. Double-click the target element that you want to map with the PreparedQuery. It is displayed in the Mapping Graph Area.

4. Click the **DB** function and select the **PreparedQuery** sub-function. A PreparedQuery node is displayed in the Mapping Graph Area (see Figure 503).
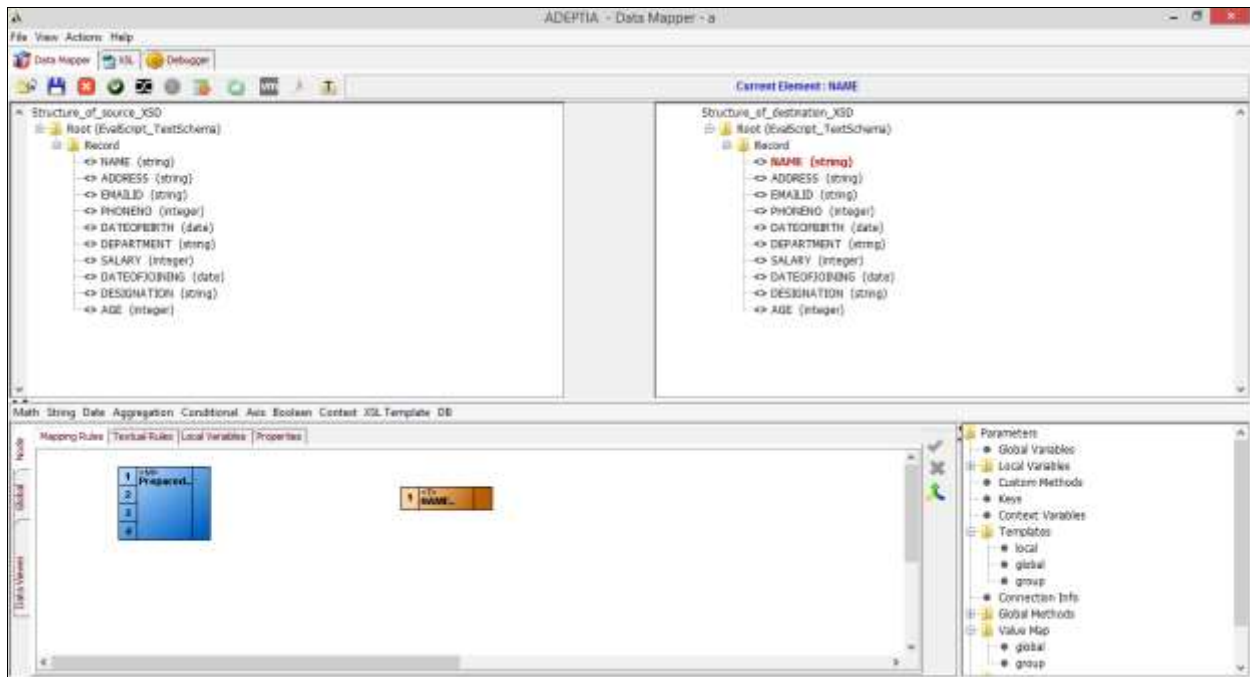
Figure 503: Add PreparedQuery Sub-Function Node

5. [Add a constant node](#) with the query for searching data from the database based on the specified condition (e.g. *Select EMPID from EMP where EMPNAME=? AND EMPCITY=? AND EMPISMALE=?, $oracle_databaseserver, true ,('Smith','Chicago','true')*).

6. Create a link from the output of the *constant* node to the first input of the *PreparedQuery* node.

7. Double-click the required *Connection Info* variable under Connection Info in the Parameters Panel. The selected Connection Info variable node is displayed in the Mapping Graph Area (see Figure 504).
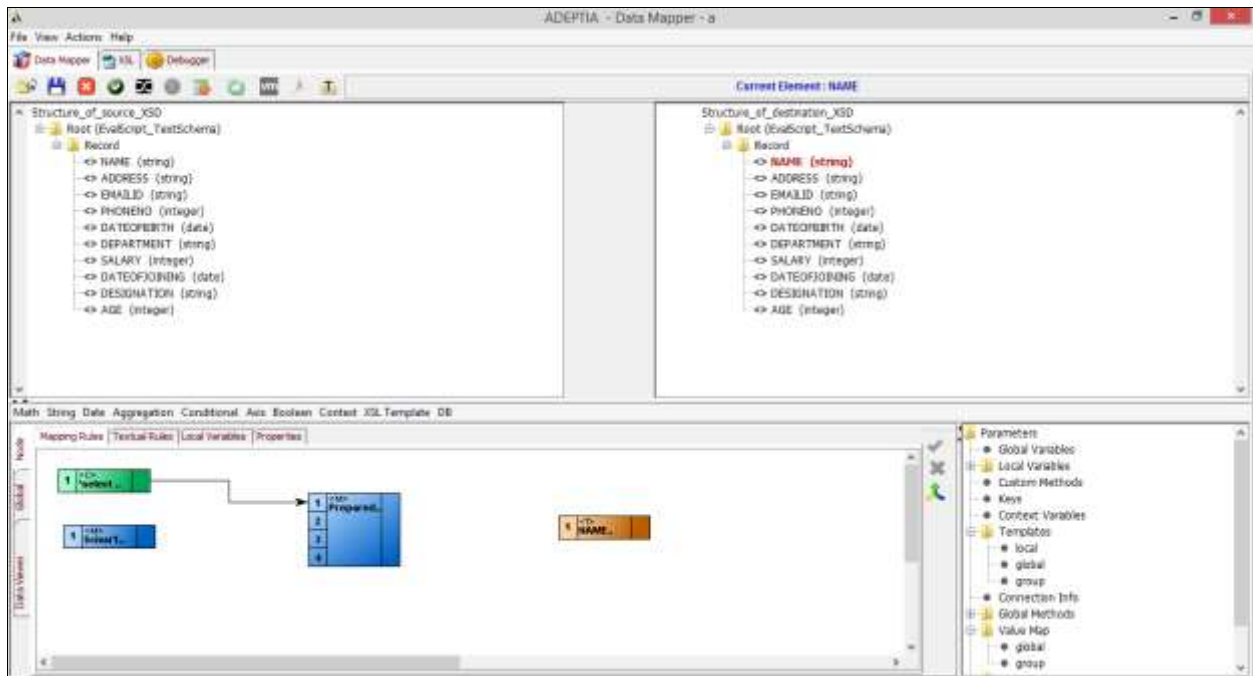
Figure 504: Connection Info Variable in Mapping Graph Area

8. Create a link from the output of the *Connection Info* variable to the second input of the *PreparedQuery* node.

9. [Add another constant node](#) for the third argument of the *PreparedQuery* function. This is a Boolean value as true or false.

10. In the fourth argument of the *PreparedQuery* function you can pass values through either as a variable, or as a constant, or as a xpath.

11. Create a link from the output of this *constant* node to the third input of the *PreparedQuery* node.

12. Create a link from the output of the *PreparedQuery* node to the input of the *target* element (see Figure 505).
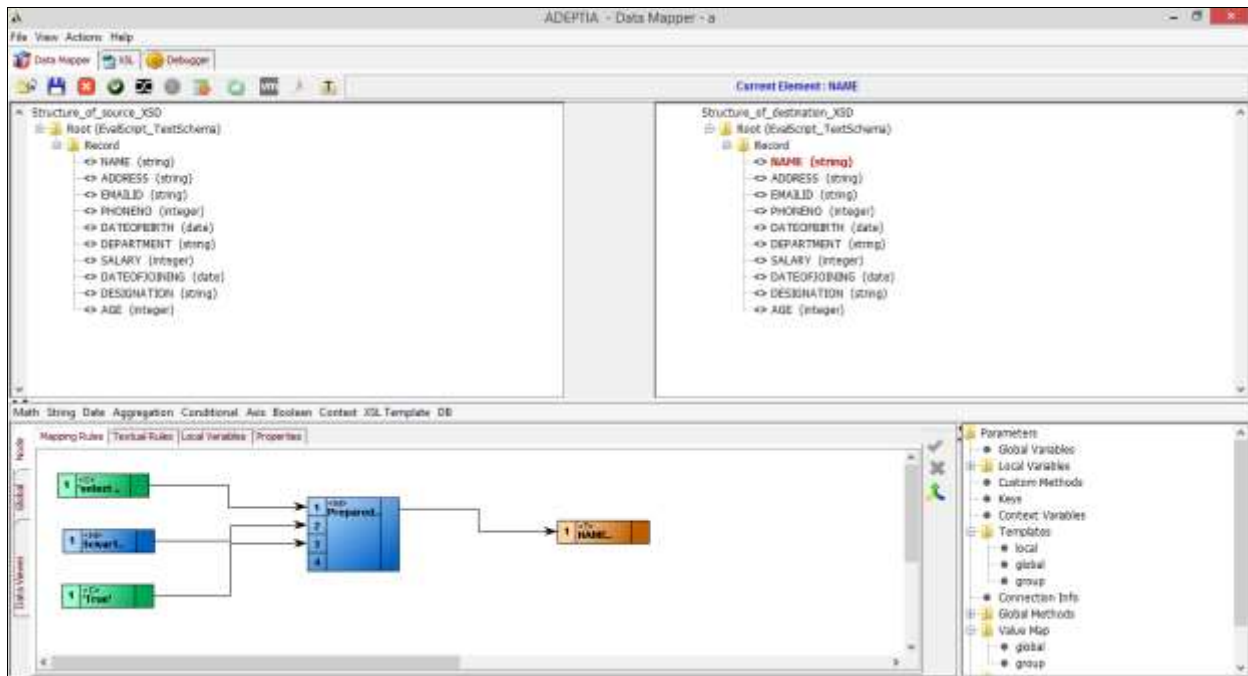
Figure 505: Create Links between Nodes for Mapping PreparedQuery Function to Target Element

13. Click the **Apply Mapping** (✓) button. This maps the PreparedQuery function to the target element. The defined query is passed to the database where a connection is created using the Connection Info variable. If the Boolean value is set as 'True' then the database fetches all the values that match the query. If the value is 'False', then the database fetches only the first matching value. If you shift focus to another node, or click any of the *Mapping Rules*, *Textual Rules*, *Node*, *Properties*, *XSL* or *Debugger* tabs, without applying the mapping, an alert message is displayed (see Figure 506).
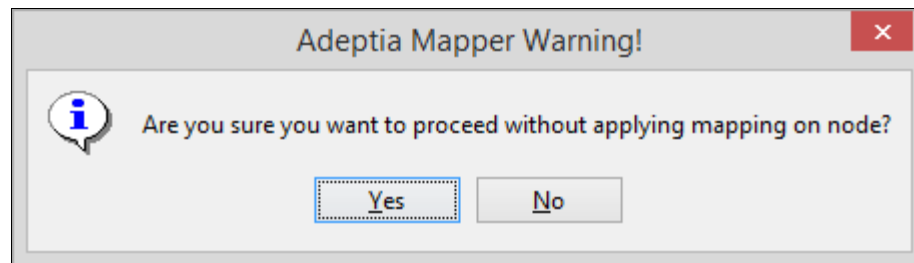
Figure 506: Mapper Warning

14. Click **No** to apply the mapping and shift focus to the other object. If you click **Yes**, then the mapping activity is cleared and is replaced by the previous mapping in the Mapping Graph Area and the focus is shifted to the other object.

> ℹ️ At times the mapping is too large and the applet memory may exceed 256M. In such cases, the mapping will fail and return an error of insufficient memory. You can overcome this situation by increasing the applet memory. For details, refer to *Appendix A* in *Administrator Guide*.

Using Textual Rules

Textual Rules are used for mapping source elements, mapping functions or constants to target elements, by defining the elements in syntax form.

Steps to map elements using the Concat function using Textual Rules

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Select the *target* element that you want to map. It is displayed in the Mapping Graph Area.

3. Click the **Textual Rules** tab in the Mapping Graph Area.

4. Click S**tring** mapping function and select **Concat** sub-function. The syntax for the Concat sub-function is displayed in the Mapping Graph Area (see Figure 507).
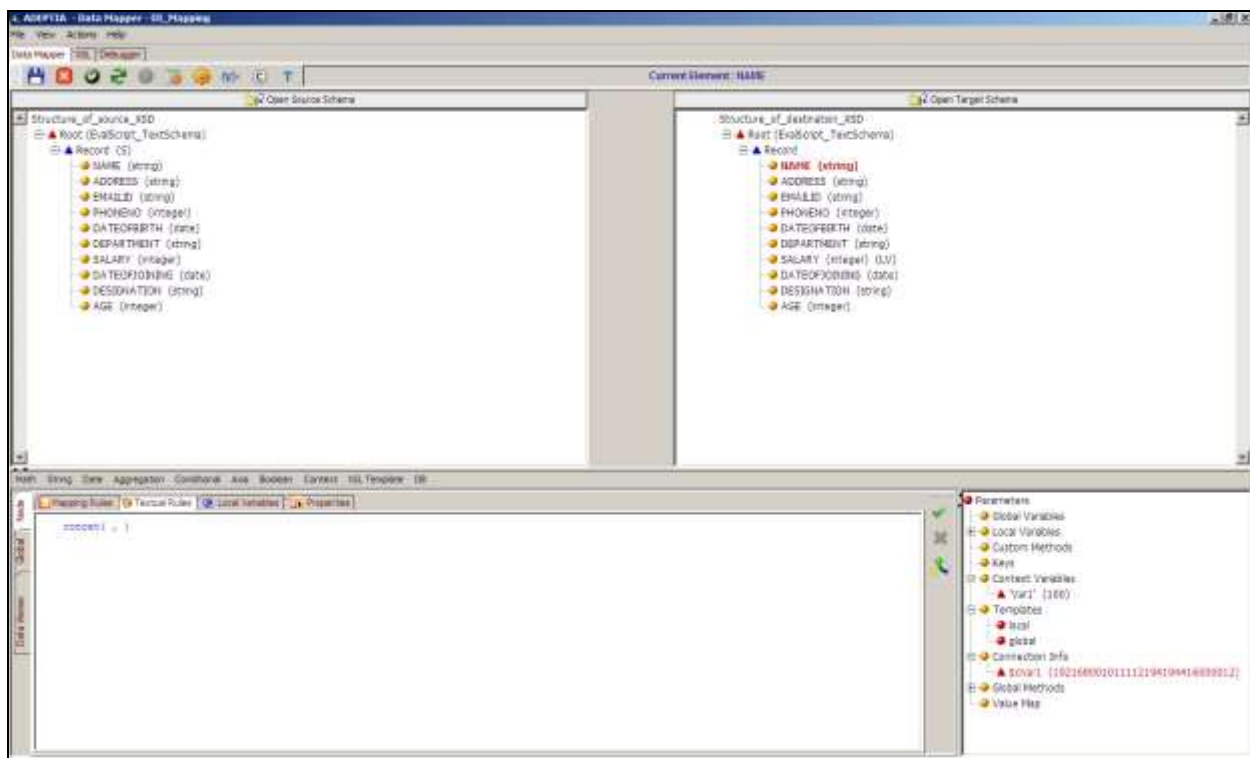
Figure 507: Syntax for Concat Sub-Function

5. This syntax has two parameters. Double-click a *source* element that you want to set as the first parameter. This displays the selected source element in the syntax.

6.   Similarly, double-click another *source* element as the second parameter. This is displayed in the syntax (see Figure 508).
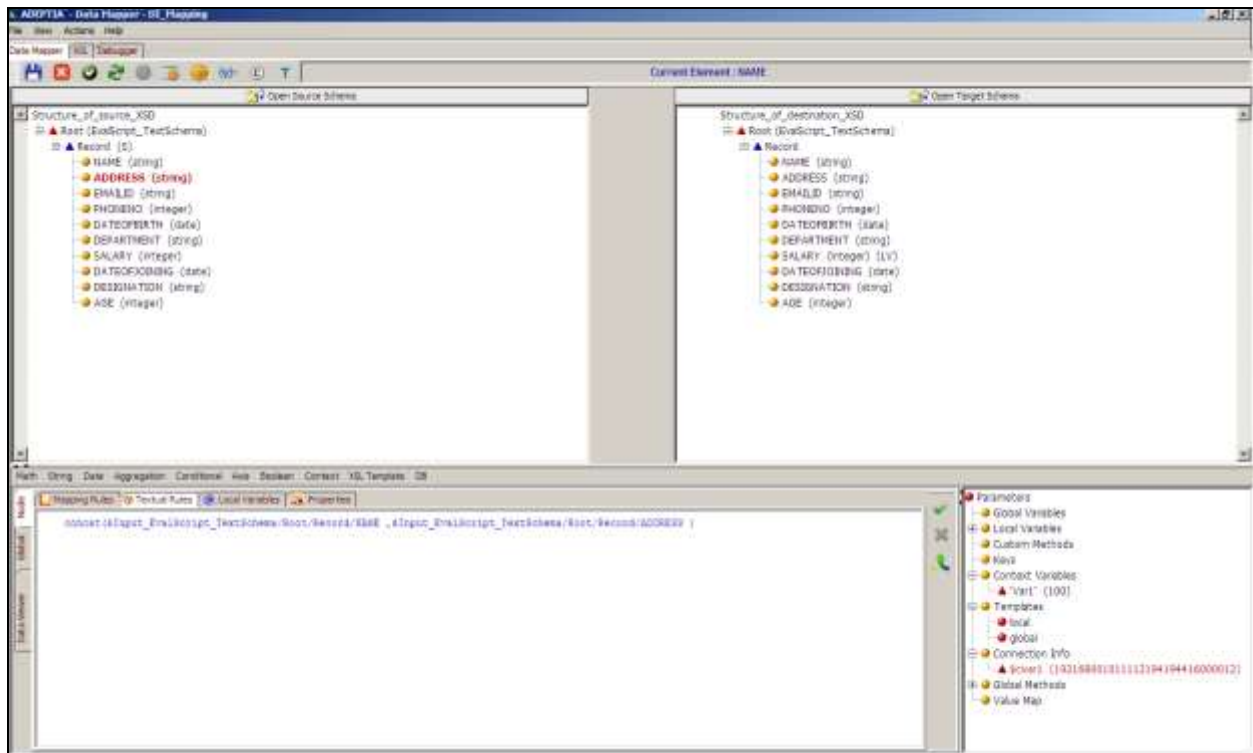
Figure 508: Parameters of the Concat Syntax

> ℹ️   You can indent the textual rule content as per your requirement.

7.   Click the **Apply Mapping** (✔) button. This maps elements using the concat sub-function. A line is displayed between the source and target panels showing the mapping of the source element to the target element.

Using Namespace

Namespace allows you to add, view, edit, and remove the namespace in the XSL. All the Namespaces present in the source and target XSD's are automatically placed in the XSL generated. These Namespaces can be viewed using **View Namespace** option in the **Namespace** submenu.

Adding Namespace

Steps to add a Namespace in the XSL

1.   Click the **Actions** menu and select **Namespace**.

2. Click the **Namespace** submenu and select **Add Namespace**. The Namespace dialog box is displayed (see Figure 509).
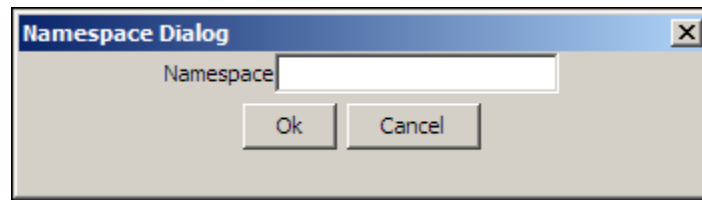
Figure 509: Adding Namespace

3. Enter the Namespace and click **OK**. The Namespace is added to the XSL.

For Example, *xmlns:oa="http://www.openapplications.org/oagis"*

> **i** The namespace added is shown in the XSL stylesheet tag.

Editing Namespace

Steps to edit a Namespace in the XSL

1. Click the **Actions** menu and select **Namespace**.

2. Click the **Namespace** submenu and select **Edit Namespace**. The **Select Namespace** screen is displayed (see Figure 510).
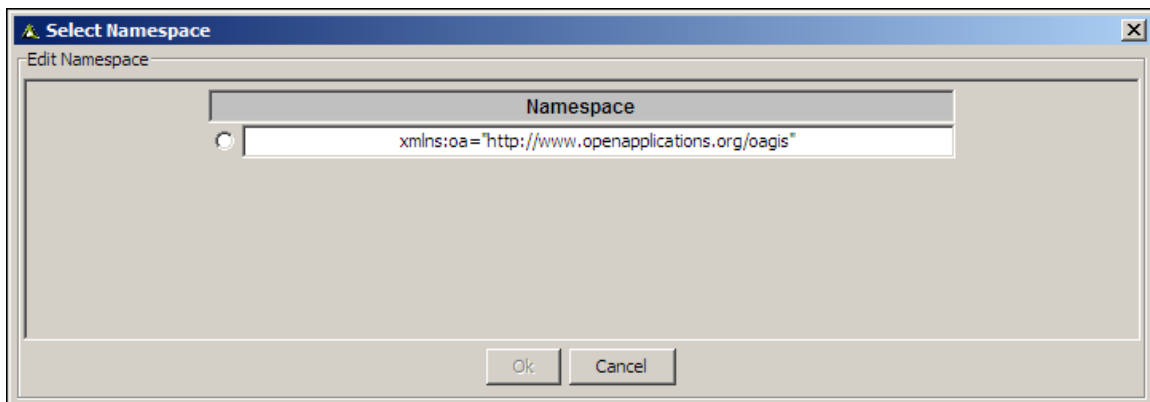
Figure 510: Select Namespace

3. Select the namespace you want to edit. This activates the **OK** button. This displays the **Namespace** dialog box in edit mode.

4. Make the necessary changes.

5. Click **OK** to save the modifications.

> **i** Similarly, you can view or remove an existing namespace.

Using XSL Template

An XSL template is a customized template. If you need to repeatedly perform a set of functions, you can create an XSL template defining those functions, and then later call that XSL template whenever required. For example, if

you need to perform addition of two numbers at regular intervals, you can define the addition function in an XSL template. You can then call this XSL template whenever required.

The XSL Template option enables you to manage XSL templates. You can add, update or delete an XSL template using this option. Once you have added an XSL template, you can use it to map elements. You can also define the scope of an XSL template while creating and saving it. Scope of an XSL Template is the context within which it is defined. An XSL template can be defined in any of the following scope:

- **Local**: The XSL Templates defined within Local scope are available within the mapping activity, in which you have created the template.
- **Global**: The XSL Templates defined within Global scope are available within all the mapping activities. Once you create a global template in a mapping activity, you can use it in all the mapping activities.
- **Group**: The XSL Templates defined within Group scope are available only within the specific group.

Creating XSL Template

You can create a XSL template using:

- **Mapping Rules**: Enables you to use the predefined mapping functions.
- **XSL Rules**: Enables you to define the XSL Template code to use the defined parameters.

Steps to Create an XSL template using the XSL Rules

1. Click **XSL Template** option displayed next to mapping functions on the Mapping Functions Panel.

2. Select **Manage XSL Template** option or click the **Manage XSL Template** ![T icon] icon in the toolbar (Figure 511).
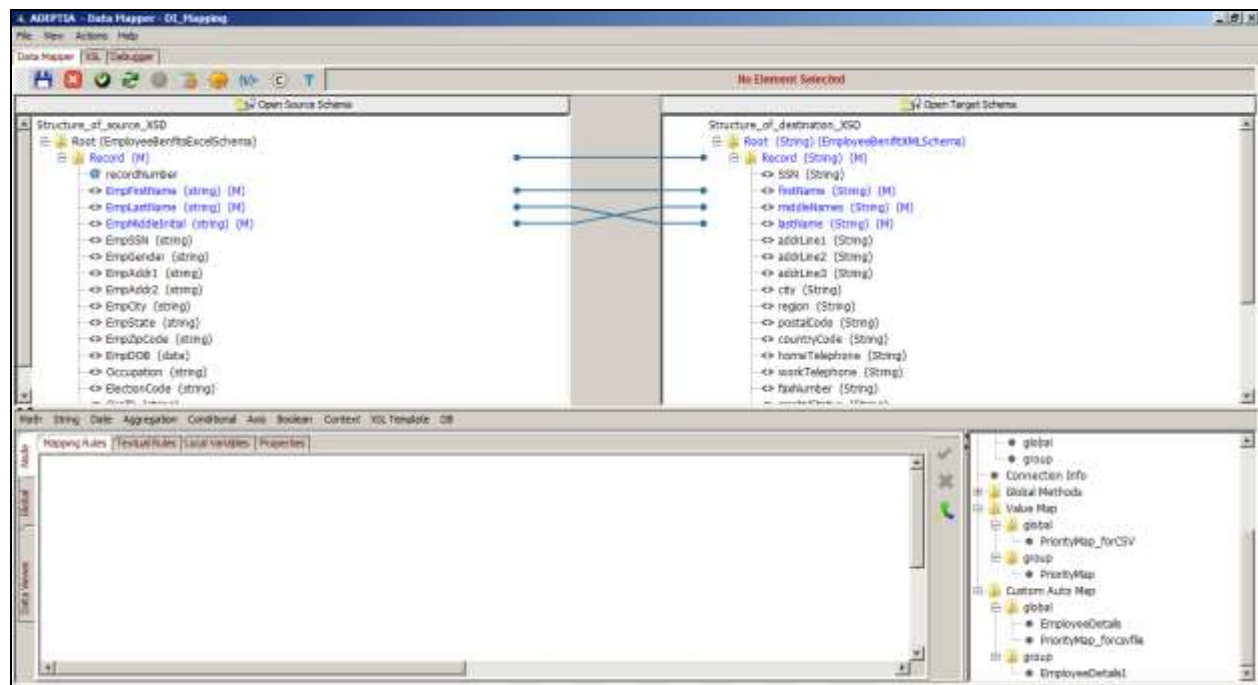
Figure 511: Data Mapper

The *Manage XSL Template* screen is displayed (see Figure 512).

Figure 512: Manage XSL Template

3. Enter the name of the new XSL template that you want to create in the **Name** field. This displays the XSL tags in the XSL Template area.

4. Select the scope of the XSl Template. The default scope of an XSl Template is **Local**.

> If you want to save the template as the Global Template, select the **Global** radio button. This will save the XSL template as Global XSL template and can be used in any mapping activity. In the Parameters panel, the XSL template will be displayed under the folder hierarchy Templates/Global.
>
> If you want to save the template within the current user group, select the **Group** radio button. This will save the XSL template as Group XSL template and can be used in any mapping activity within the current user group. In the Parameters panel, the XSL template will be displayed under the folder hierarchy Templates/Group.

> ℹ️ You cannot change the scope of a XSL Template once you have saved the XSL template. The respective radio buttons become non-editable thereafter.

5. Click the **Add** ➕ button to add parameters for the new XSL template.

6. Enter the name of the parameter you want to add in the **Name** field. It also generates the corresponding XSL in the XSL Template editor on the *Manage XSL Template* screen

7. Click the **Add** ➕ icon again to add the required parameters or press the **Enter** key to insert a new row. This will add a row immediately next to the row which is currently selected (see Figure 513).
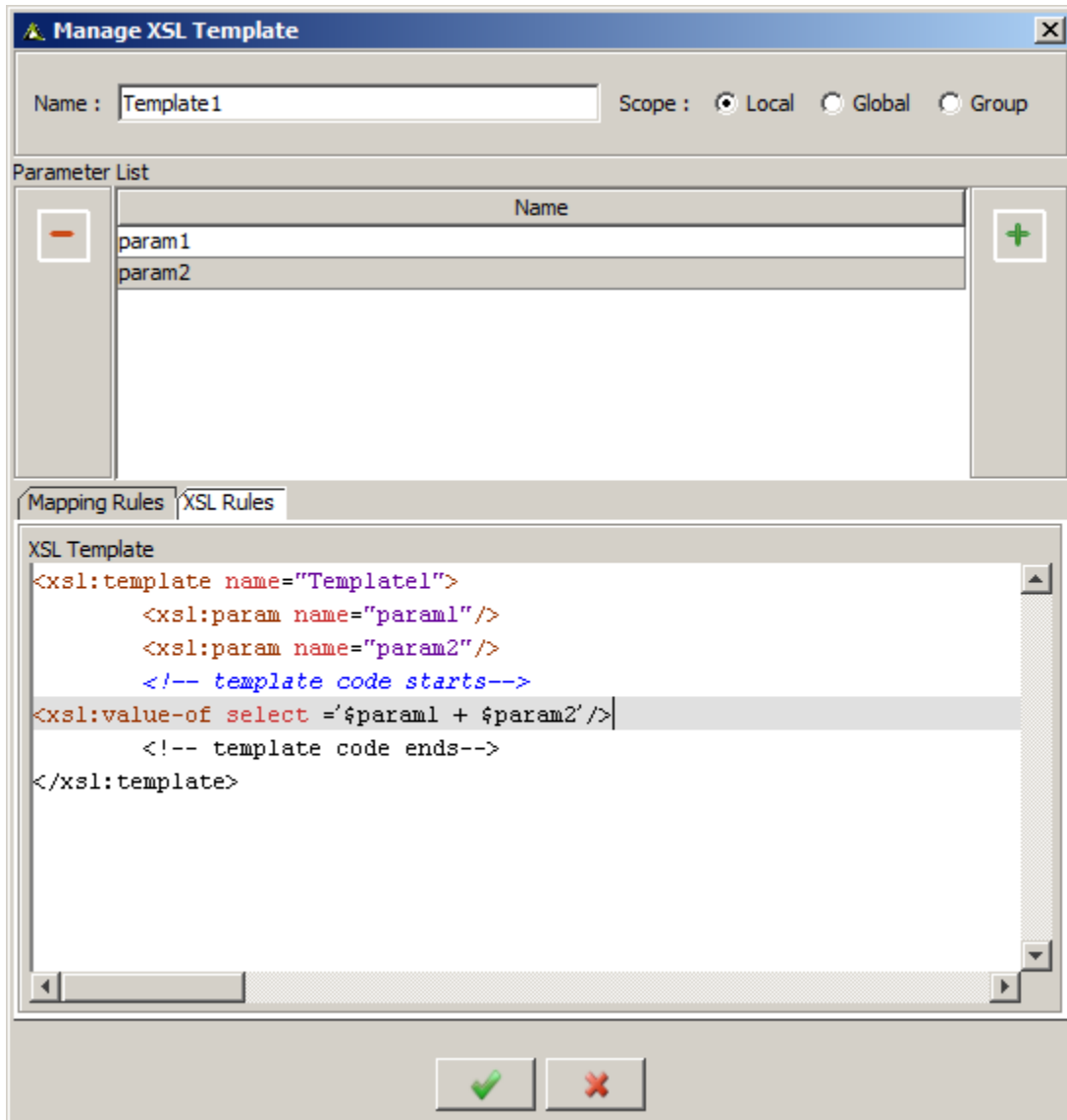
Figure 513: Manage XSL Template: XSL Rules

> ℹ️ If you need to delete any row, select the respective row and click the **Delete** ➖ icon.

8. Enter the code for the function that you want to perform, for example, addition of two numbers, in the 'add here' line, in the **XSL Template** field. The syntax of the addition function would be:

   <xsl:value-of select ="$param1 + $param2"/>

   where:

   value-of is the syntax for the value to be returned

   param1 and *param 2* are the defined parameters

9. Once you have entered the code, click Local XSL template. This displays the saved template under the Templates list on the **XSL Template** screen. The new XSL template is also displayed under Templates in the **Parameters Panel** (see Figure 514).
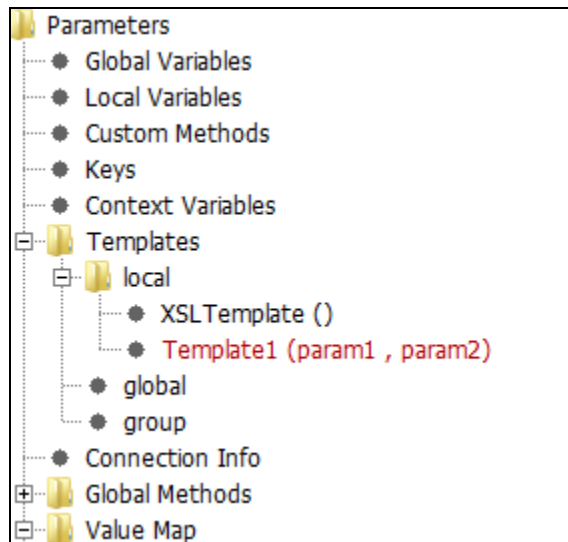
Figure 514: Parameters Panel

Once you have created a XSL template, you can use it to map elements. On the *Manage XSL Template* screen, by default the **XSL Rules** tab is selected. To create a XSL template using the Mapping Rules, click the **Mapping Rules** tab.

Steps to create an XSL template using the XSL Rules

1. On the *Manage XSL Template* screen, click the **Mapping Rules** tab.

2. Enter the name of the new XSL template that you want to create in the **Name** field.

3. Select the scope of the XSL Template. The default scope of the XSL template is **Local**.

4. Click the **Add** ➕ icon to add parameters for the new XSL template.

5. Enter the name of the parameter you want to add, in the **Parameter Name** field.

6. Click the **Add** ➕ icon again to add the required parameters or press the **Enter** key to insert a new row. This will add a row immediately next to the row which is currently selected.

7. Select the required Mapping Function. For example, select the mapping function, **Math > Add** (see Figure 515).
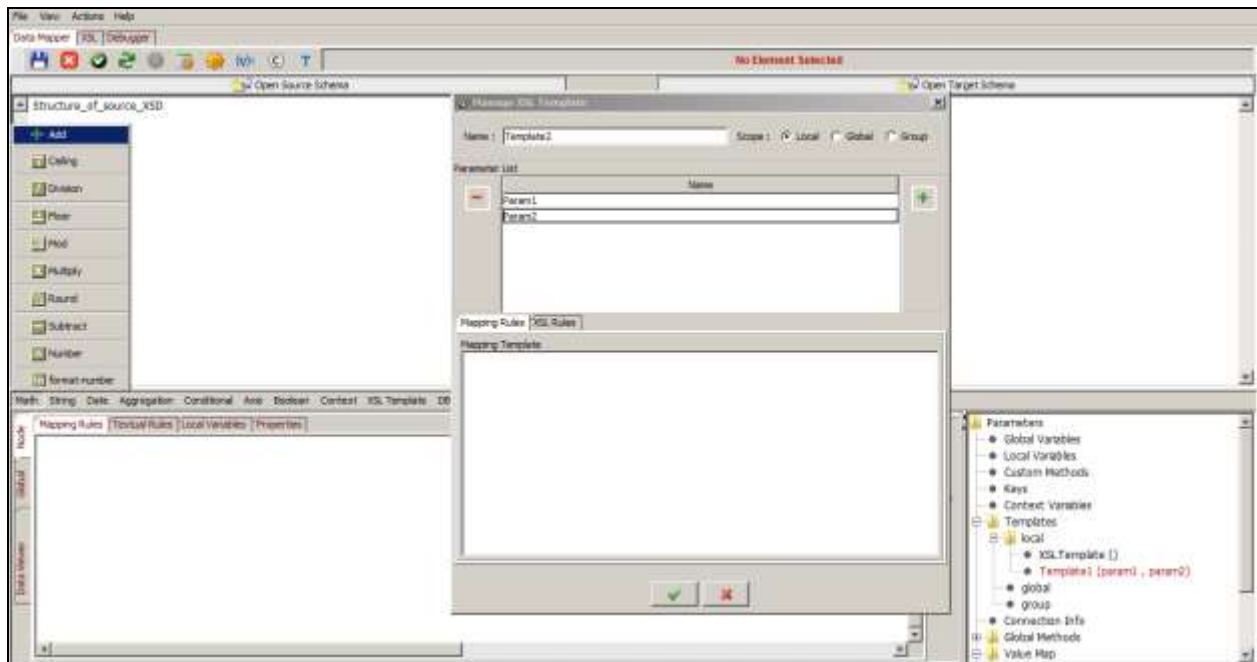
Figure 515: Manage XSL Template: Mapping Rules

8. The respective mapping function (add symbol for this example) is displayed in the Mapping template (see).
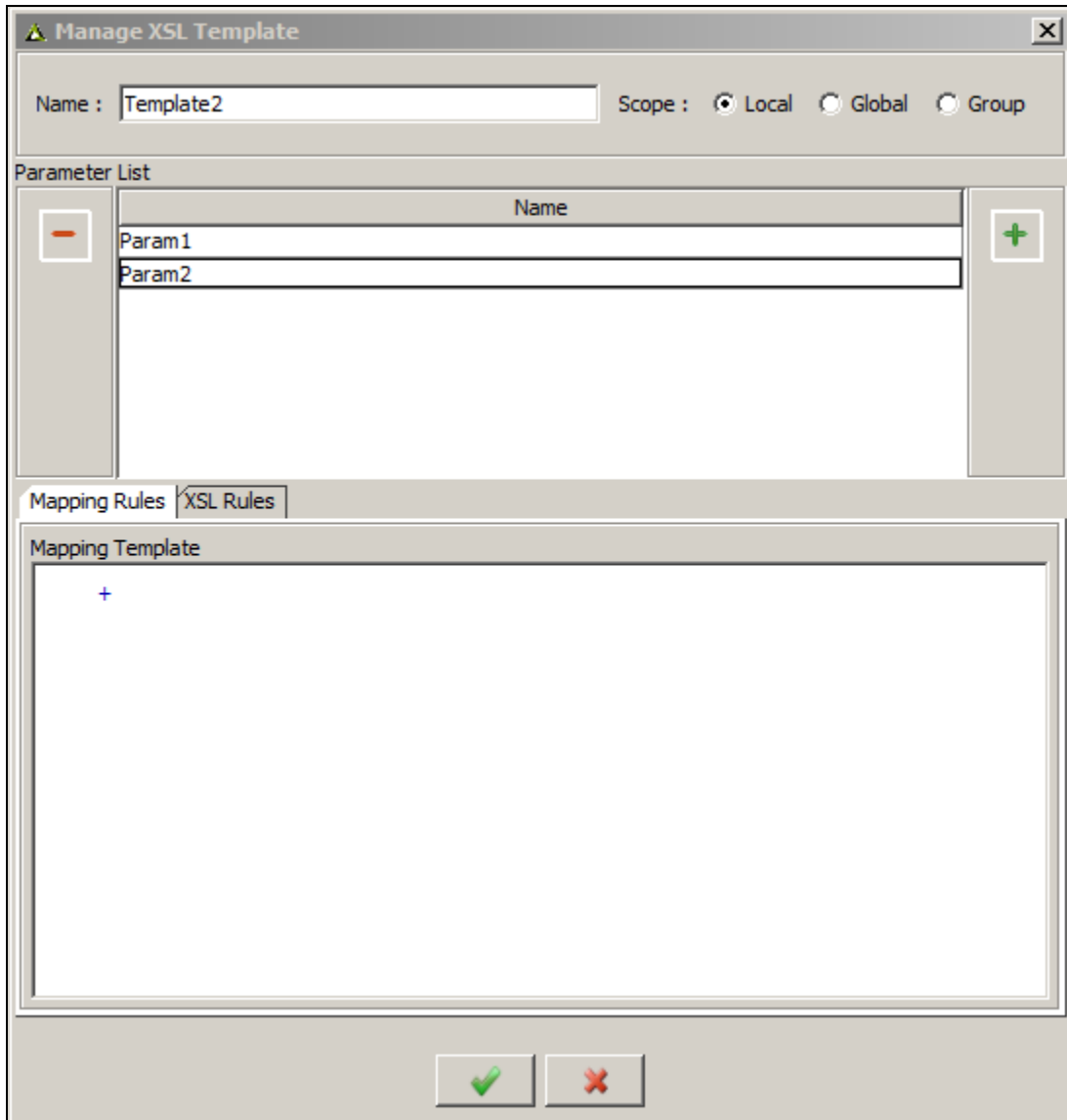
Figure 516: Mapping Template: Mapping Function Symbol

9. Use the parameters that you have added in the previous steps.

> **ℹ** If you need to delete any row, select the respective row and click the **Delete** — icon.

10. Click the **Save** ![save button] button to save the Local XSL template. This displays the saved template under the Templates list on the **XSL Template** screen. The new XSL template is also displayed under Templates in the **Parameters Panel**.
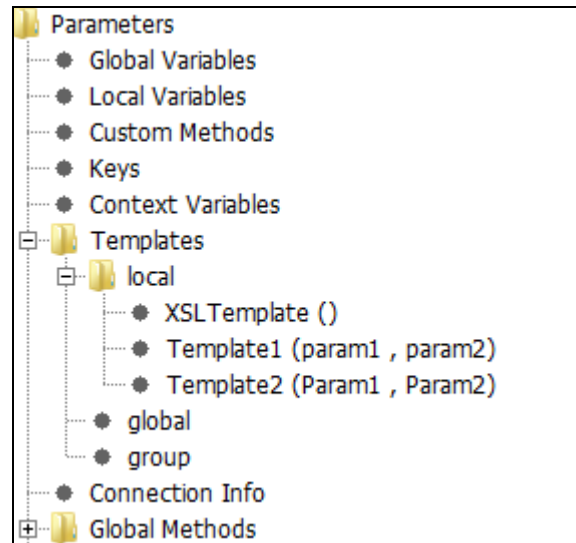
Figure 517: Parameters Panel

> ℹ️ The name and parameters of the new XSL template are also displayed under the Templates list in the Parameters Panel. You can edit or delete an XSL template from the Parameters Panel itself. For details, refer to the Managing a Global Variable from Parameter Panel section.

Map Elements using XSL Template

Steps to map elements using an XSL Template

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that the source and target elements to be mapped are selected and displayed in the Mapping Graph Area.

3. Click the XSL template that you want to use for performing the required function, from the **Templates** list in the Parameters Panel. A Call XSL Template node is displayed in the Mapping Graph Area (see Figure 518).
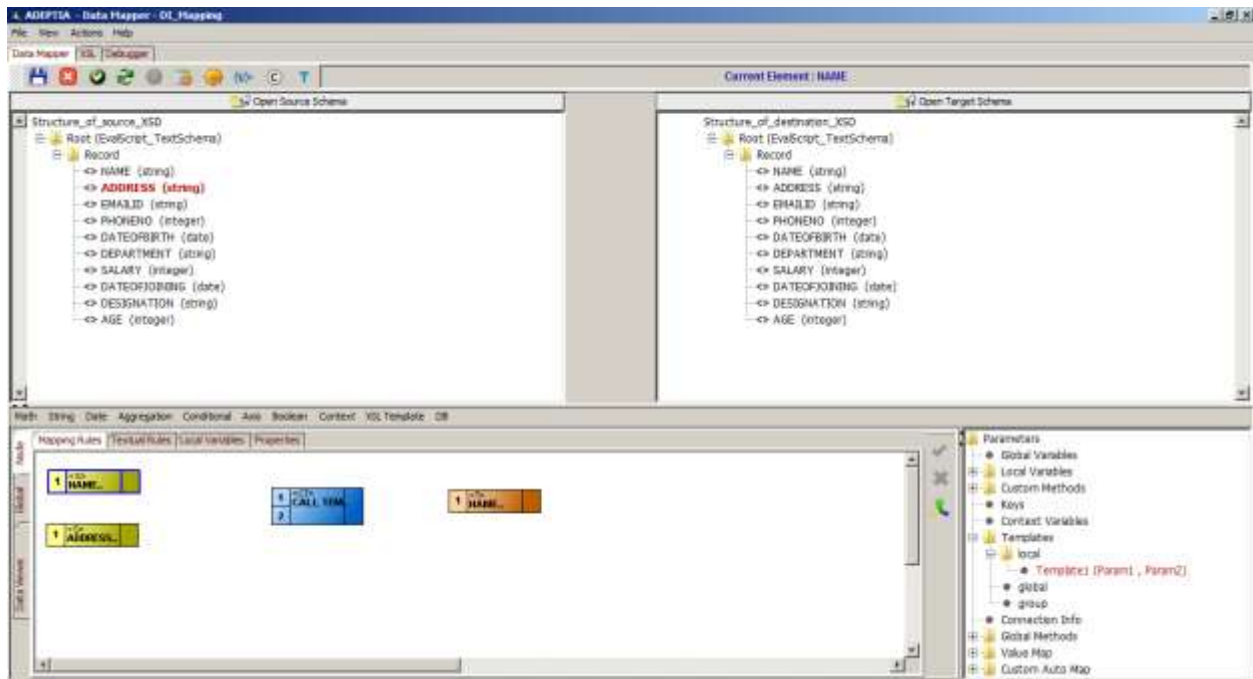
Figure 518: Call XSL Template Node

4. Create a link from the output of the first *Source* element to the first input of the *Call XSL Template* node.

5. Create a link from the output of the second *Source* element to the second input of the *Call XSL Template* node.

6. Create a link from the output of the *Call XSL Template* function node to input of the *Target* element node (see Figure 519).
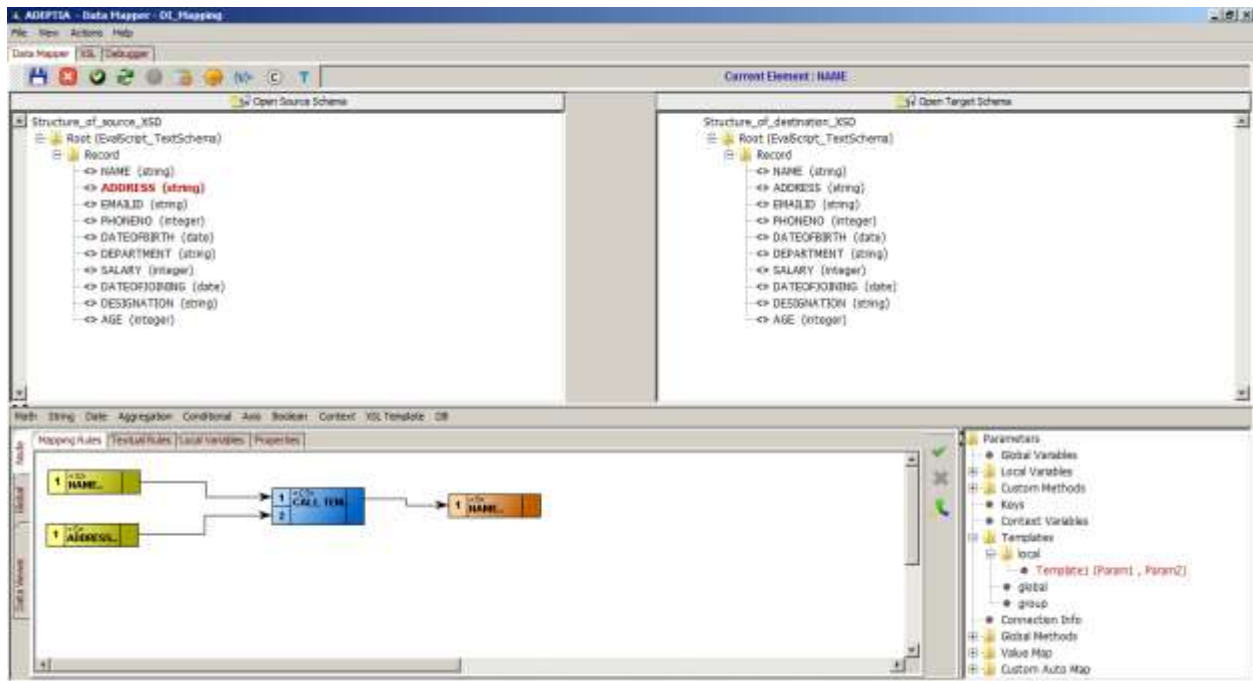
Figure 519: Create Links between Nodes for Mapping Elements using XSL Template

7. Click **Apply Mapping** (![icon]) button. This maps elements using the Call XSL Template function node.

Using Global Variable

Global variables are used for mapping source elements, mapping functions or constants to target elements. They are declared and used globally for all target elements.

To use a global variable in a mapping activity, you need to map it to a target element. This will successfully execute the global variable when you execute the mapping activity in the process flow.

> ![info icon] A global variable differs from a context variable, in the respect that it is available only within the selected mapping activity. Context variables are available in the process designer too.

Declare Global Variable

Steps to declare a Global Variable

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Global** tab in the Mapping Graph Area. All tabs of the **Global** tab are displayed.

3. Click the **Global Variables** tab. The **Global Variable** pane is displayed in the Mapping Graph Area (see Figure 520).

Figure 520: Global Variable Pane

4. Click the **Global Variable Name** text field and enter the name of the global variable you want to create (e.g. *emp_age*). Press the **Tab** or **Enter** key. This takes the control to the **Global Variable Value** field.

5. Enter the value of the global variable in the **Global Variable Value** field. You can enter the value of the global variable using one of the listed methods:

    - Click required source element
    - Select the required Mapping function
    - Type the required value manually
    - Select a Custom Method

    > To select a Custom Method as the value of a global variable, double click the desired **Custom Method** under *Custom Methods* in the Parameters Panel. The selected Custom Method is displayed in the **Variable Definition** field.
    >
    > To learn how to declare a Custom Method, refer to section Using Custom Method.

6. Enter comments for the global variable in the **Add Comment** field (see Figure 521). For example, if the global variable value contains complex XSLT logic, you can enter its description in this field.

i   The **Comments** field is resizable.
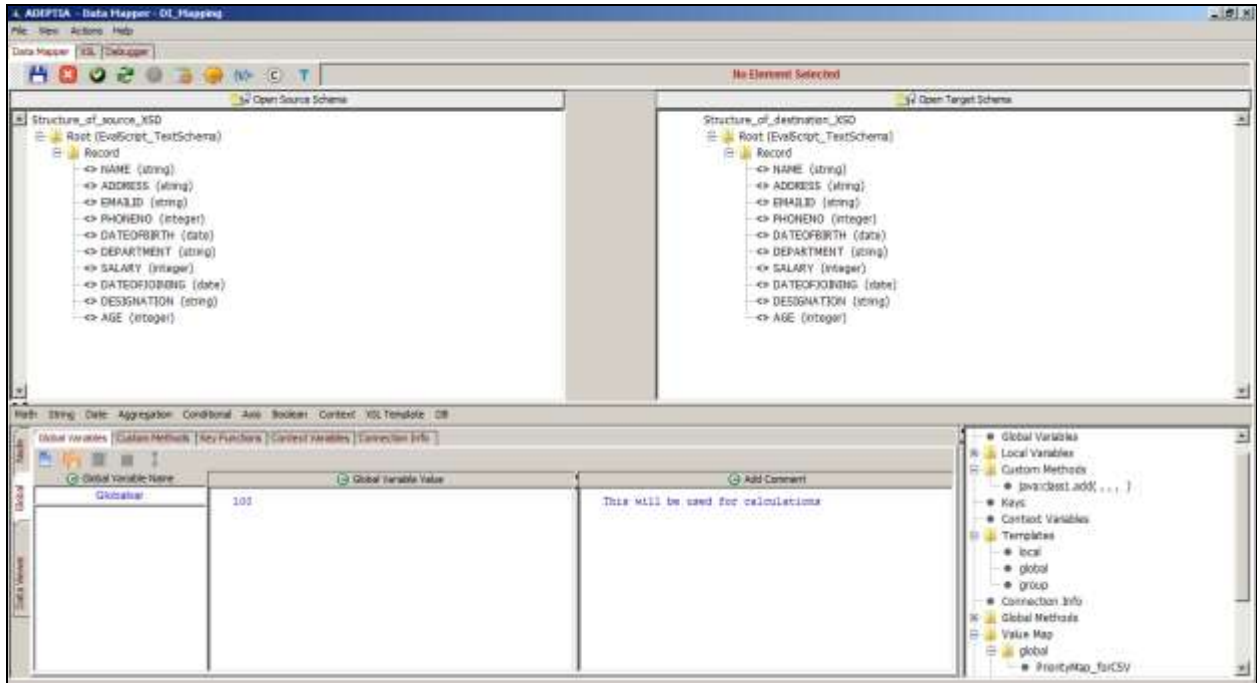
Figure 521: Enter Name, Value and Comments of Global Variable

7. Click **Save Global Variable** (   ) button to save the global variable. This global variable is added to the list of existing variables in the **Global Variable Name** field. It is also displayed under *Global Variables* in the Parameters Panel. If you shift the focus to another node, or click any of the *Mapping Rules, Textual Rules, Local Variables, Properties, XSL* or *Debugger* tabs, without saving the global variable, an alert message is displayed. (see Figure 522). The comments added for the global variable are saved and displayed above the global variable declaration in the Mapping XSL (refer to Figure 523).
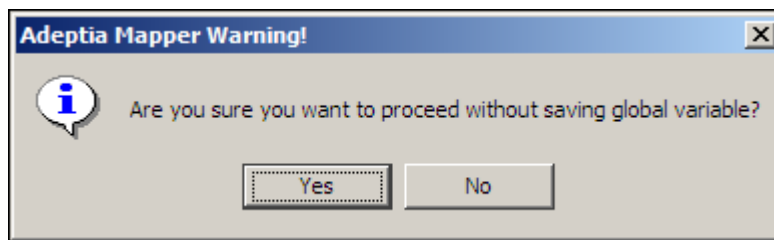
Figure 522: Alert Message

i   For example, you have defined a global variable *Var1*, and you click the **Name** target element, without saving *Var1*, then the alert message is displayed.

The alert message is also displayed when shifting focus between Global and Node tabs.

8. Click **No** to save the global variable and shift the focus to the other object. If you click **Yes**, then the defined global variable is cleared and the focus is shifted to the other object.
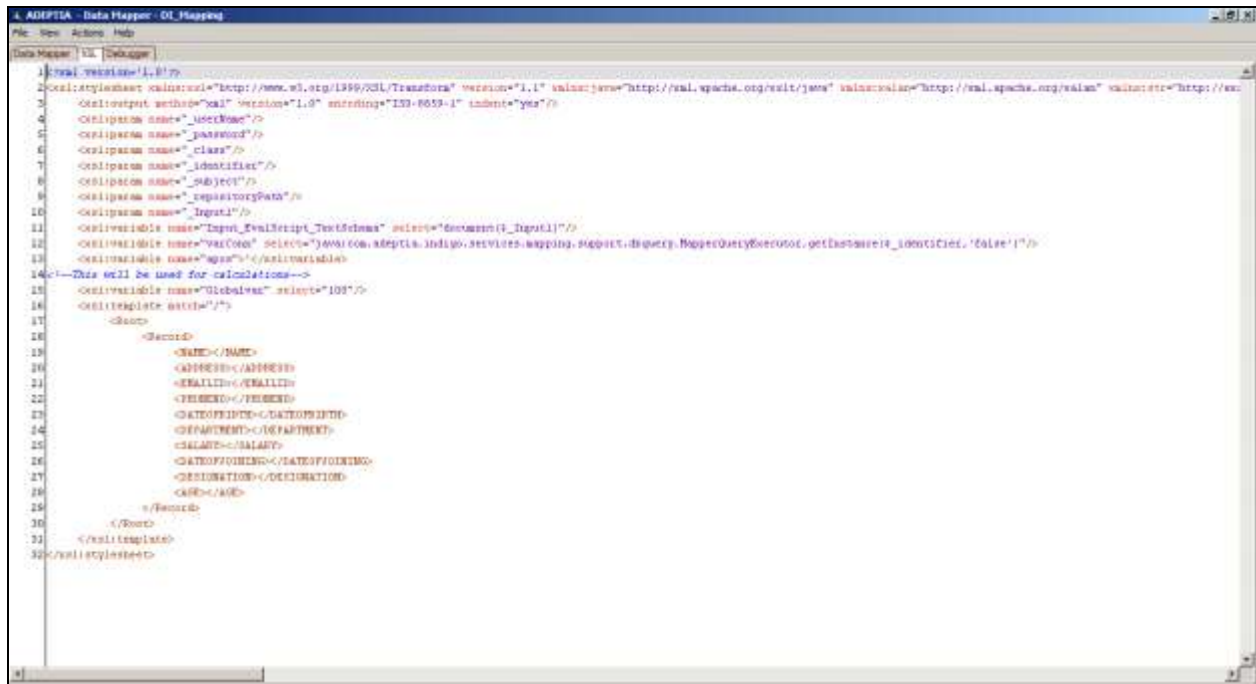
Figure 523: Comment in Mapping XSL

> ℹ️ You can rearrange the global variables by dragging it up or down in the list.

> ℹ️ To remove a global variable, select the global variable and click **Remove selected global variable** (🗑️) button.
>
> To remove all global variables, click **Remove all global variables** (🟥) button.

Managing a Global Variable from the Parameters Panel

Once the global variable is added to the Parameters Panel, you can edit it or delete it anytime from this Panel itself.

Steps to manage a Global Variable from the Parameters Panel

1. Right-click the **global variable** that you want to edit or delete. This displays the right dropdown menu (see Figure 524).
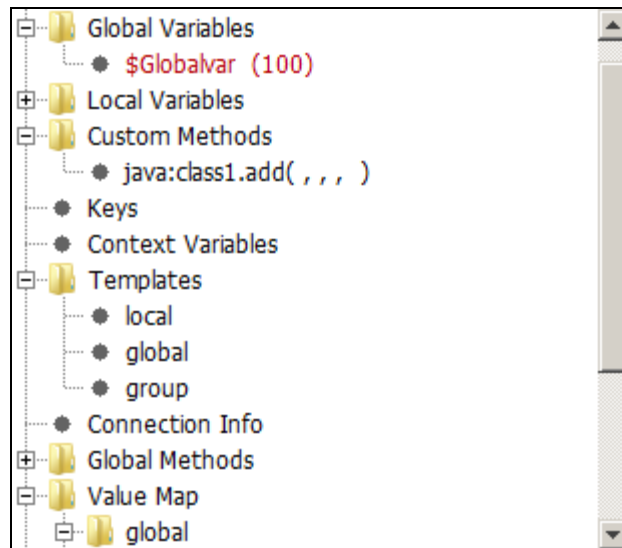
Figure 524: Right-Click menu of Elements in Parameter Panel

2. Select **Edit** to edit the variable. This displays the selected global variable in Edit mode. You can edit the value of the global variable in the **Global Variable Value** field. You can also edit the name of the global variable.

3. Alternately, select **Remove** to delete the selected variable. This displays a confirmation screen for the delete operation (see Figure 525).
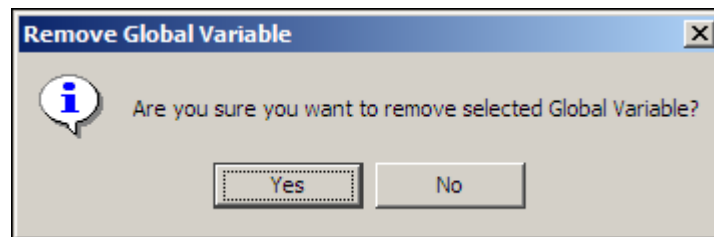
Figure 525: Confirm Delete of Global Variable

4. Click **Yes** to delete the selected variable.

Map Global Variable to Target Element

Once you have created a global variable, you can map it to a target element.

Steps to map Global Variable to target element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of the Node tab are displayed. Click **Mapping Rules** tab.

3. Select a *target* element. This displays the selected target element node in the Mapping Graph Area.

4. Double-click the required **global variable** under *Global Variables* in the Parameters Panel. The selected global variable node is displayed in the Mapping Graph Area (see Figure 526).
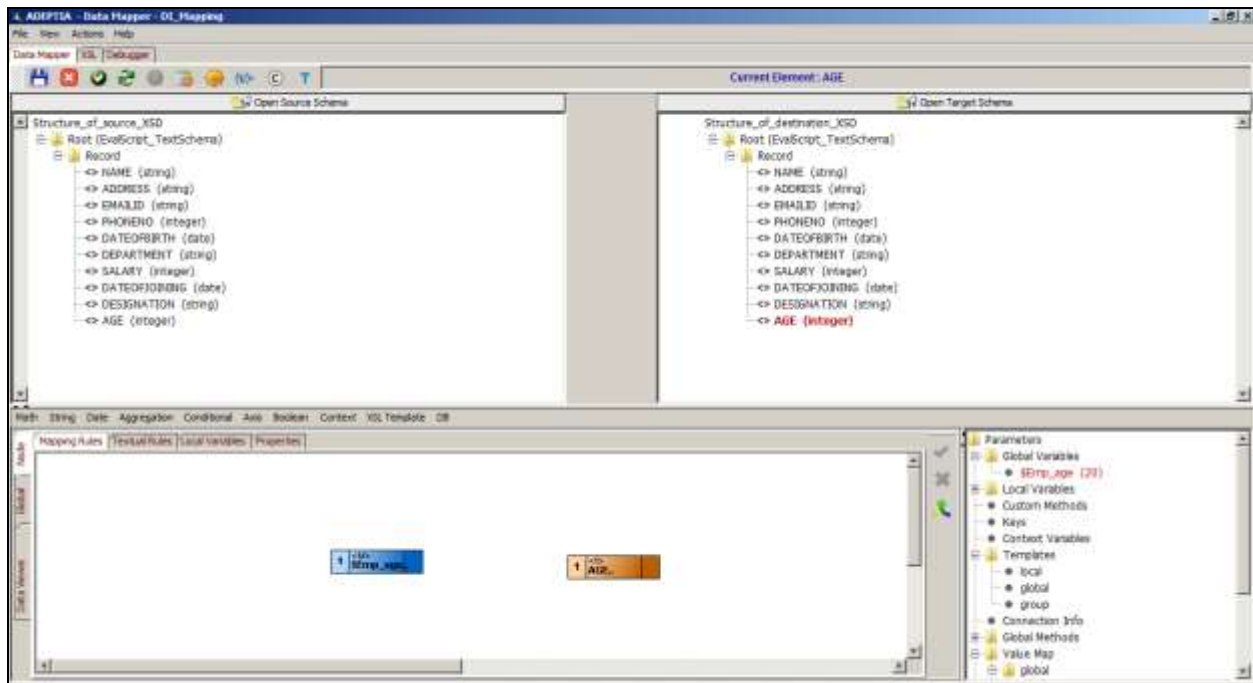
Figure 526: Add Global Variable Node

5. Create a link from the output of the global variable to the input of the target element.

6. Click the **Apply Mapping** (✔) button. This maps the global variable to the target element. If you shift the focus to another target element, or click any of the *Node, XSL* or *Debugger* tabs, without applying the mapping, then an alert message is displayed. (refer to Figure 522).

7. Click **No** to apply the mapping and then shift the focus to the other object. If you click **Yes**, then the mapping activity is cleared and is replaced by the previous mapping in the Mapping Graph Area and the focus is shifted to the other object.

> ℹ️ Once a global variable is mapped to a target element, the letter **(M)** is displayed next to the mapped target element. This signifies that a target element has been mapped. Refer to Table of Suffixes for details on suffixes displayed next to a target element.

8. Save the mapping activity and exit the Data Mapper.

> ℹ️ You can view and validate the generated mapping XSL, view the target XML and view and validate mapping output, before saving the mapping activity.

Using Local Variable

Local variables are used for mapping source elements, mapping functions or constants to a specific target element. They are declared and used only for the specific target element or attribute for which they are declared.

To use a local variable in a mapping activity, you need to map it to the specific target element or attribute. This will successfully execute the local variable when you execute the specific mapping activity in the process flow.

Declare Local Variable

Steps to declare a Local Variable

1. Ensure that the [source and target schemas are loaded](#) and all their elements are listed under their respective nodes.

2. Click **Node** tab displayed in the Mapping Graph Area. All tabs of the Node tab are displayed.

3. Click the **Local Variables** tab. The Local Variable pane is displayed in the Mapping Graph Area (see Figure 527).
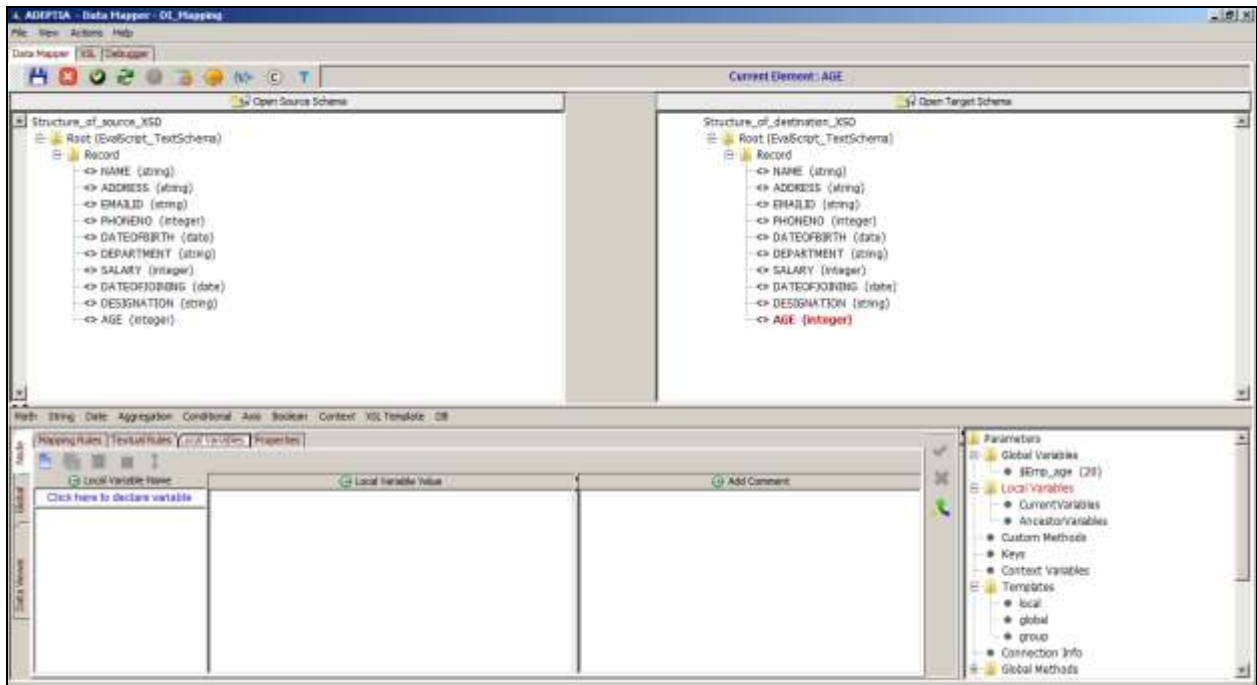
Figure 527: Local Variable Pane

4. Click **Local Variable Name** text field and enter the name of the local variable you want to create (e.g. *varQuery*). Press the **Tab** or **Enter** key. This takes the control to the **Local Variable Value** field.

5. Enter the value of the local variable in the **Local Variable Value** field. You can enter the value of the local variable using one of the listed methods:

   - Click required source element
   - Select the required Mapping function
   - Type the required value manually
   - Select a Custom Method

6. Enter comments for the local variable in the **Add Comment** field (see Figure 528). For example, if the local variable value contains complex XSLT logic, you can enter its description in this field.

> The **Comments** field is resizable.
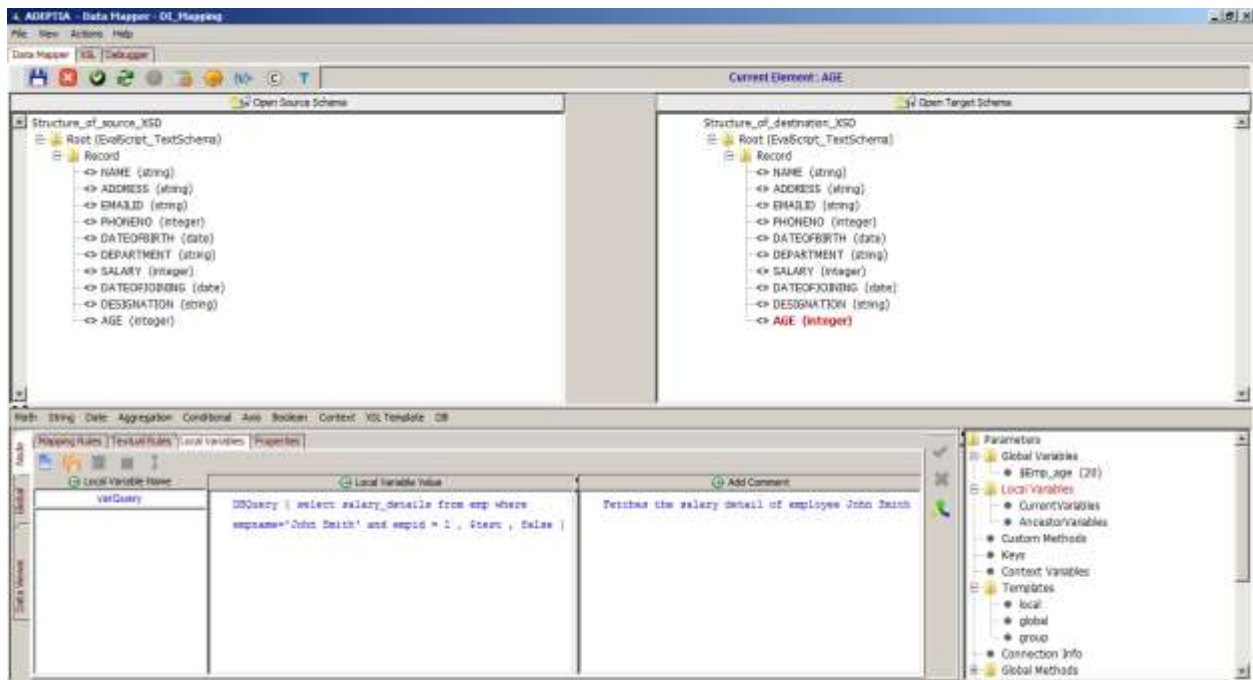
Figure 528: Enter Name, Value and Comment for Local Variable

> ℹ️ To select a Custom Method as the value of a local variable, double click the desired **Custom Method** under *Custom Methods* in the Parameters Panel. The selected Custom Method is displayed in the **Variable Definition** field.
>
> To learn how to declare a Custom Method, refer to section <u>Using Custom Method</u>.

7. Click the **Save Local Variable** ( ) button to save the local variable for the selected target element. This local variable is added to the list of existing variables in the **Local Variable Name** field. It is also displayed under *Local Variables* in the Parameters Panel. If you shift the focus to another node, or click any of the *Mapping Rules, Textual Rules, Global Variables, Properties, XSL* or *Debugger* tabs, without saving the local variable, an alert message is displayed (refer to <u>alertmsg</u> Figure 522). The comments added for the local variable are saved and displayed above the local variable declaration in the Mapping XSL (refer to Figure 523).

> ℹ️ The alert message is also displayed when shifting focus between Global and Node tabs.

8. Click **No** to save the local variable and shift the focus to the other object. If you click **Yes**, then the defined local variable is cleared and the focus is shifted to the other object.

> ℹ️ Once the local variable is saved, it is categorized as *Current Variable* or *Ancestor Variable* in the Parameters Panel. If it is created for a child node, then it is saved as a *Current Variable*. If it is created for a parent's parent node, then it is saved as an *Ancestor Variable*.

> **i** You can rearrange the local variables by dragging it up or down in the list.

Steps to manage a Local Variable from the Parameters Panel

1. Right-click the **local variable** that you want to edit or delete. This displays the right dropdown menu.

2. Select **Edit** to edit the variable. This displays the selected local variable in Edit mode. You can edit the value of the local variable in the **Local Variable Value** field. You can also edit the name of the local variable in the **Local Variable Name** field (see Figure 529).
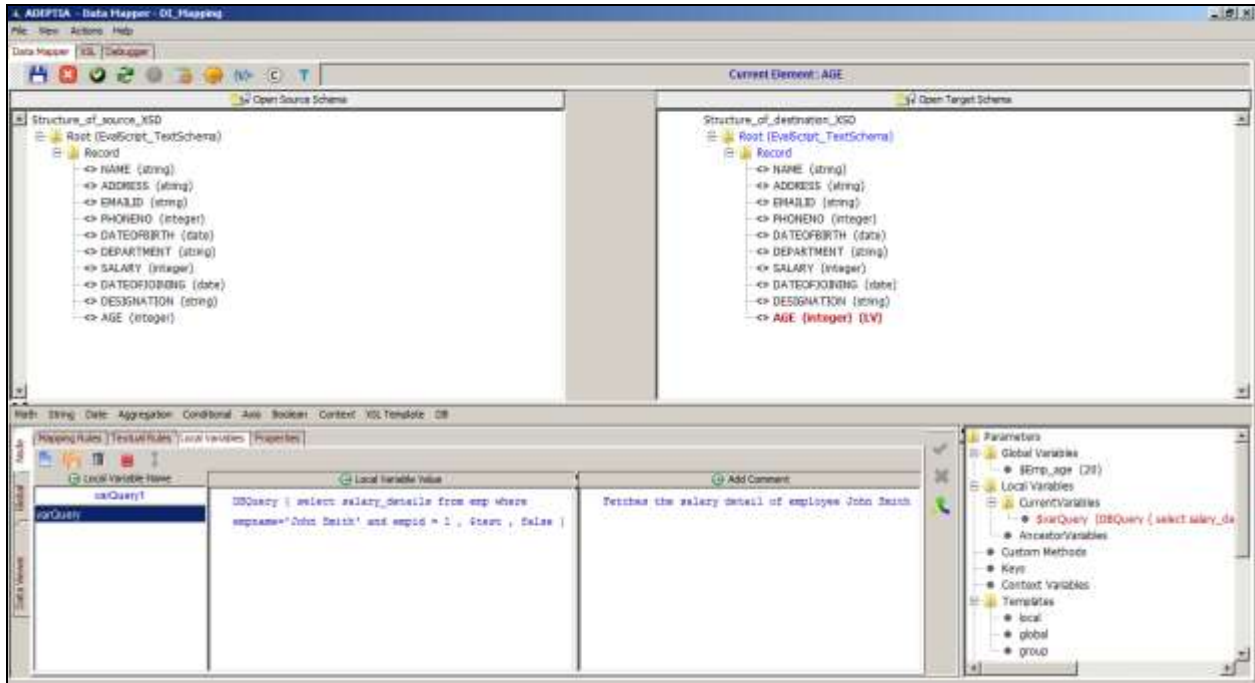
Figure 529: Edit Name, Value and Comment for Local Variable

3. Click the **Save Local Variable** ( ) button to save the edited local variable. An alert message is displayed (see
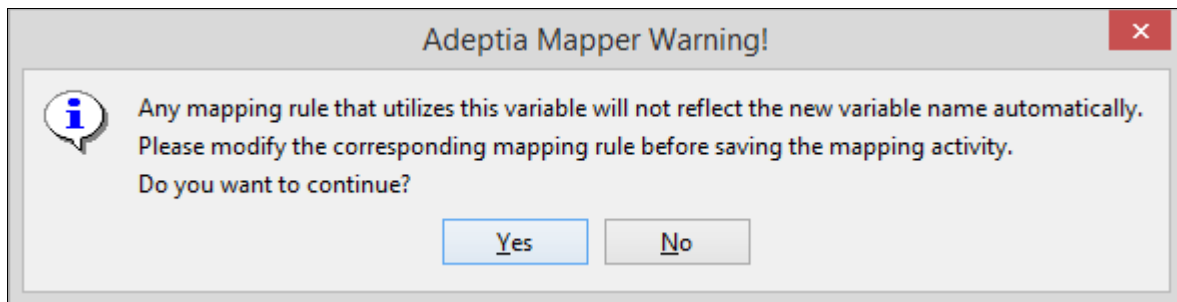
Figure 530: Alert Message

4. Click **OK** to save the changes.

> **i** To remove a local variable, select the local variable and click **Remove selected local variable** ( ) button.

> To remove all local variables, click **Remove all local variables** (![icon]) button.
>
> Alternately, you can delete a local variable from the Parameters Panel itself. For details, refer to the Managing a Global Variable from Parameter Panel section.

Map Local Variable to Target Element

Once you have created a local variable, you can map it to the specific target element or attribute.

Steps to map Local Variable to specific target element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of the **Node** tab are displayed. Click **Mapping Rules** tab.

3. Select a *target* element. This displays the selected target element node in the Mapping Graph Area.

4. Double-click the required **local variable** under *Local Variables* in the Parameters Panel. The selected local variable node is displayed in the Mapping Graph Area (see Figure 531).
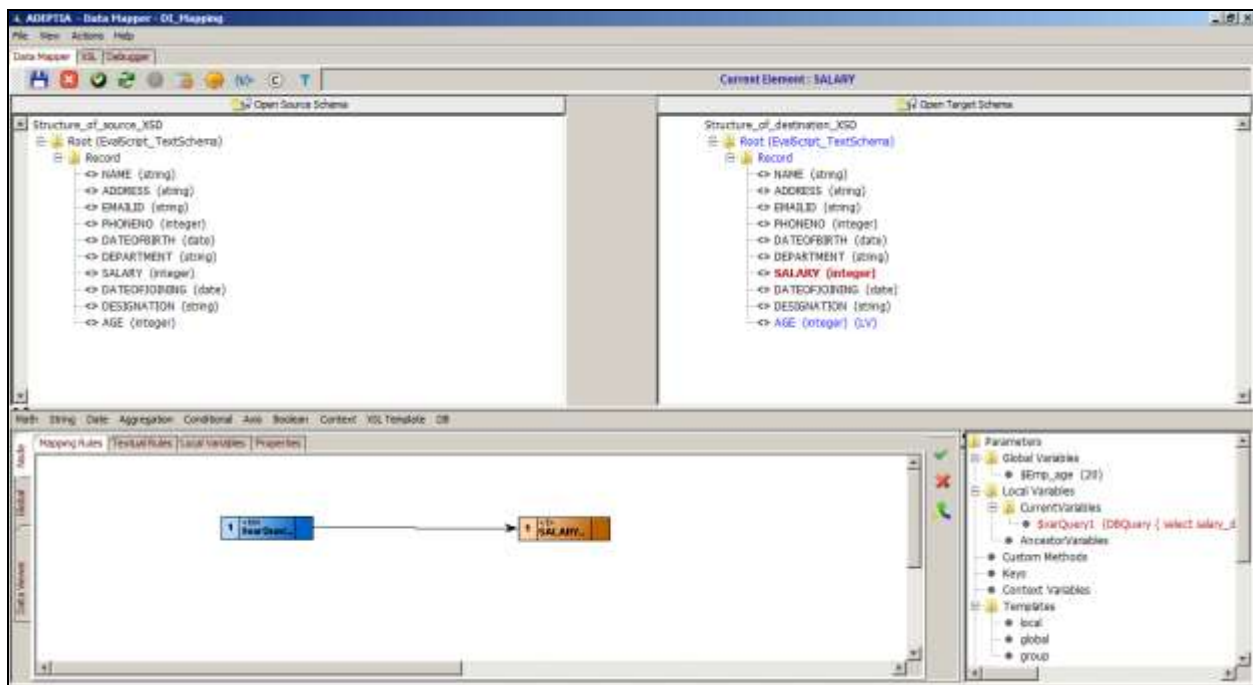
Figure 531: Add Local Variable Node

5. Create a link from the output of the *local variable* to the input of the *target* element.

6. Click the **Apply Mapping** (![icon]) button. This maps the local variable to the selected target element. If you shift the focus to another target element, or click any of the *Global, XSL* or *Debugger* tabs, without applying the mapping, then an alert message is displayed (refer to Figure 522).

7. Click **No** to apply the mapping and then shift focus to the other object. If you click **Yes**, then the mapping activity is cleared and is replaced by the previous mapping in the Mapping Graph Area and the focus is shifted to the other object.

> Once a local variable is mapped to a target element, the letter **(LV)** is displayed next to the mapped target element. This signifies that a local variable has been mapped to the target element. The letter **(M)** is also displayed indicating the target element has been mapped. Refer to Table of Suffixes for details on suffixes displayed next to a target element.

> Local variables do not allow duplicate names at the same level. You need to right-click to edit the local variable, where you can select the source.

8. Save the mapping activity and exit the Data Mapper.

> You can view and validate the generated mapping XSL, view the target XML and view and validate mapping output, before saving the mapping activity.

Using Custom Methods

A custom method is used to call a function from a custom Java class in a package. It is declared and used globally for all target elements.

To use a custom method in a mapping activity, you need to map it to a target element. This will successfully execute the custom method when you execute the mapping activity in the process flow.

Prerequisites

- The package containing the custom java class must be copied in the folder *<InstallFolder>/ServerKernel/customClasses.*

Declare a Custom Method

Steps to declare a Custom Method

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Global** tab displayed in the Mapping Graph Area. All tabs of the **Global** tab are displayed.

3.   Click the **Custom Methods** tab. The **Custom Methods** pane is displayed (see Figure 532).
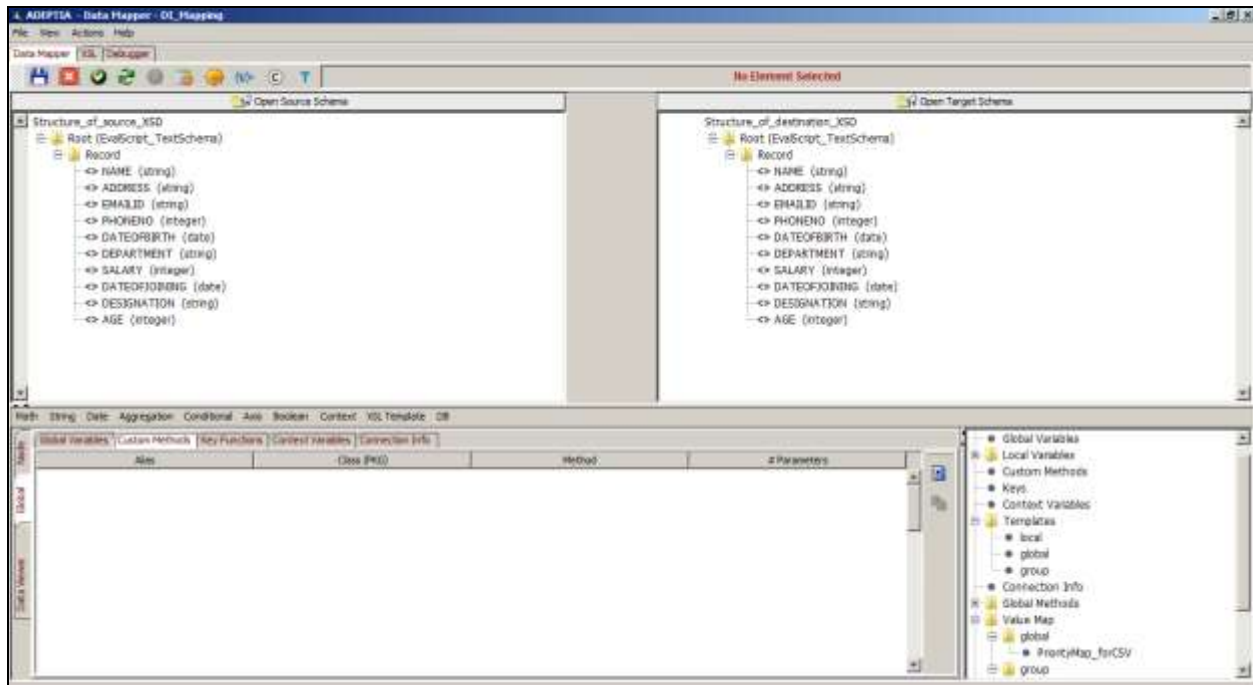
Figure 532: Custom Methods Pane

4.   Click the **Add New Method** ( ) button to add a Custom Method. A row is inserted with the listed columns as displayed in Figure 533:

- Alias
- Class (PKG)
- Method
- # Parameters
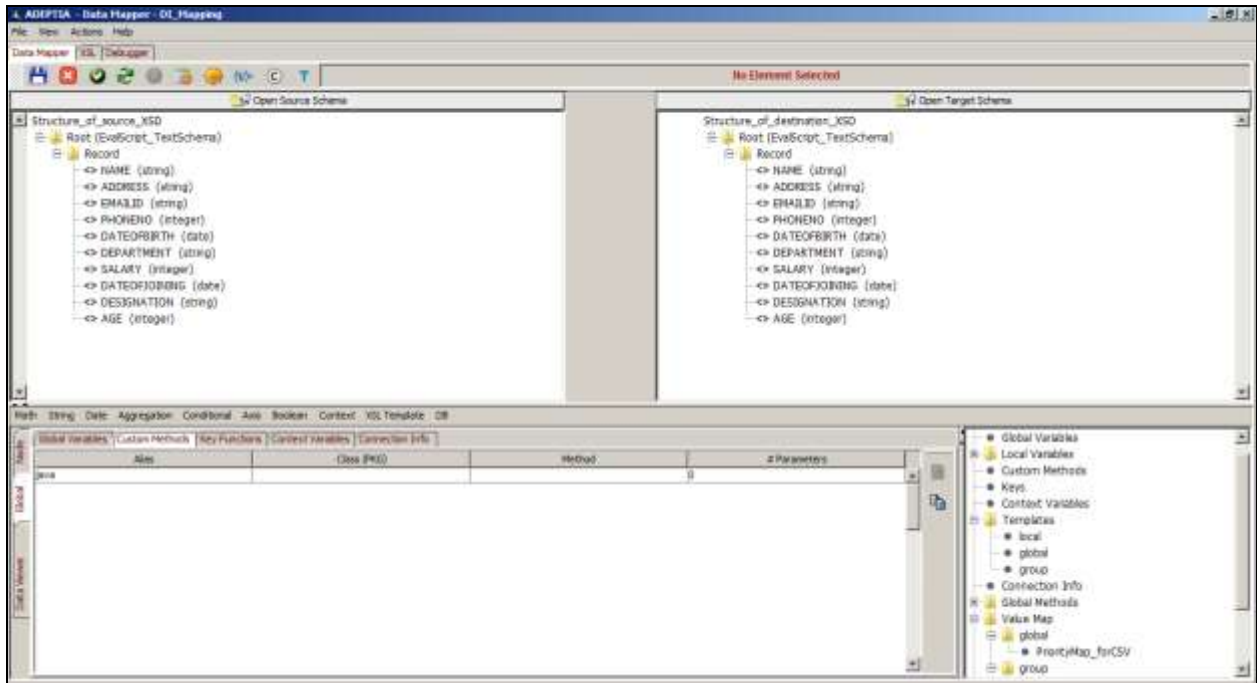
Figure 533: Add Custom Method

5. The value 'java' is automatically displayed in the *Alias* column. This is a read-only field.

6. Click **Alias** field and then press **Enter** or **Tab** key to activate the **Class (PKG)** field.

7. Enter the fully qualified name of the Java class in the **Class (PKG)** field and press **Enter** or **Tab** key to activate the **Method** field.

8. Enter the name of the custom method in the **Method** column and press **Enter** or **Tab** key to activate the **#Parameter** field.

9. Enter the number of arguments taken by Method in the **#Parameter** column. A custom method can take any number of arguments. However, if you enter a value greater than 4, then a warning message appears (see Figure 534).
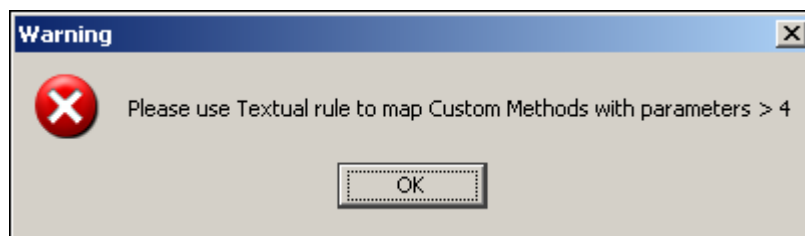
Figure 534: Warning for Adding more than 4 Parameters

10. Click **OK** to close the message. This saves the custom method and displays it under **Custom Methods** in the Parameters Panel (see Figure 535).
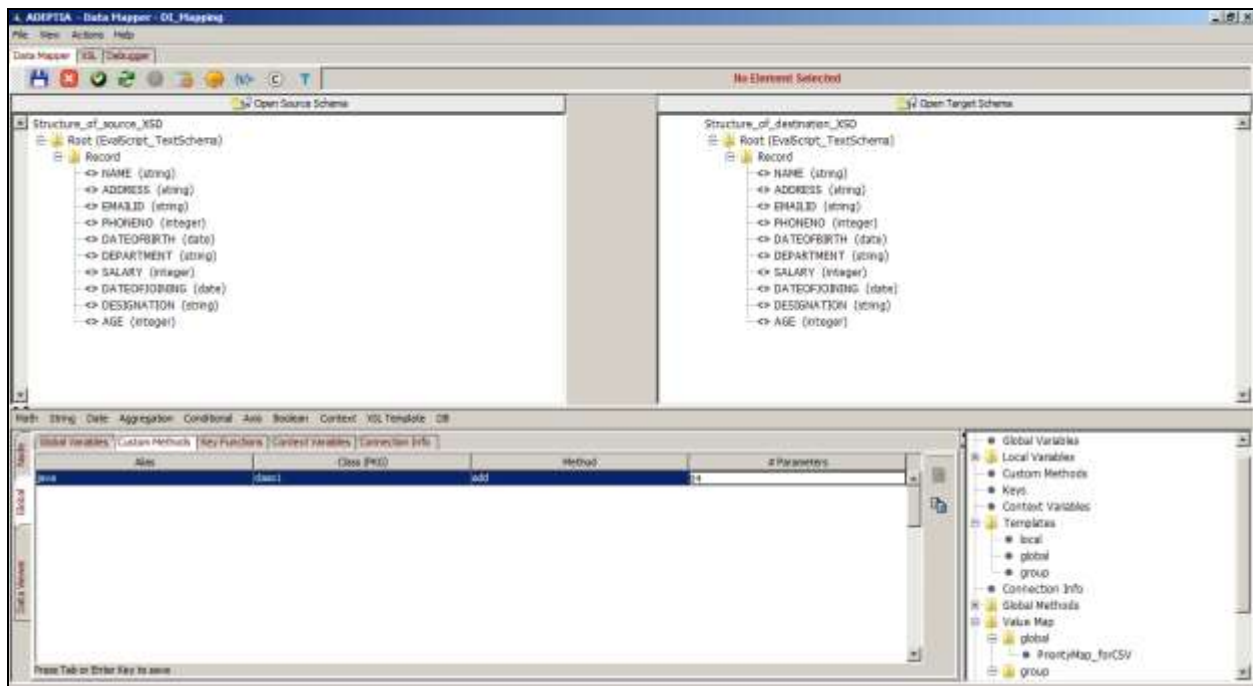
Figure 535: Custom Method added to Parameters Panel

> To remove a custom method, select the custom method and click the **Remove selected method** (📋) button.
>
> Alternately, you can edit or delete a custom method from the Parameters Panel itself. For details, refer to the Managing a Global Variable from Parameter Panel section.

Map Custom Method to Target Element

Once you have created a custom method, you can map it to a target element.

Steps to map Custom Method to target element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of the Node tab are displayed. Click **Mapping Rules** tab.

3. Select a *target* element. This displays the selected target element node in the Mapping Graph Area.

4. Double-click the required **custom method** under **Custom Methods** in the **Parameters** Panel. The selected method node is displayed in the Mapping Graph Area (see Figure 536).
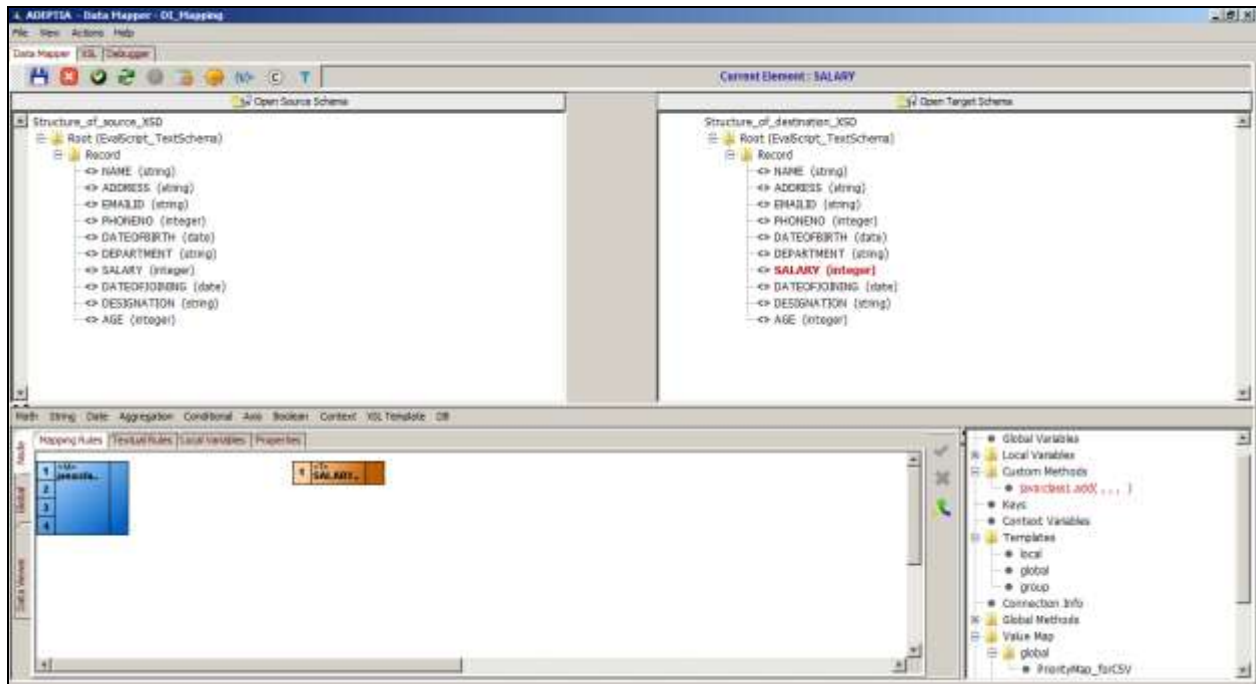
Figure 536: Add Custom Method Node

> ℹ️ If the custom method is defined with more than 4 parameters, then double-clicking the custom method will display the warning message (refer to Figure 534). Once you click **OK**, you need to define the mapping using Textual Rules.

5. Click two *source* elements. The selected source nodes are displayed in the Mapping Graph Area.

6. Create a link from the output of the first *source* element to the first input of the *custom method* node.

7. Create a link from the output of the second *source* element to the second input of the *custom method* node.

8. Create a link from the output of the *custom method* node to the input of the *target* element (see Figure 537).
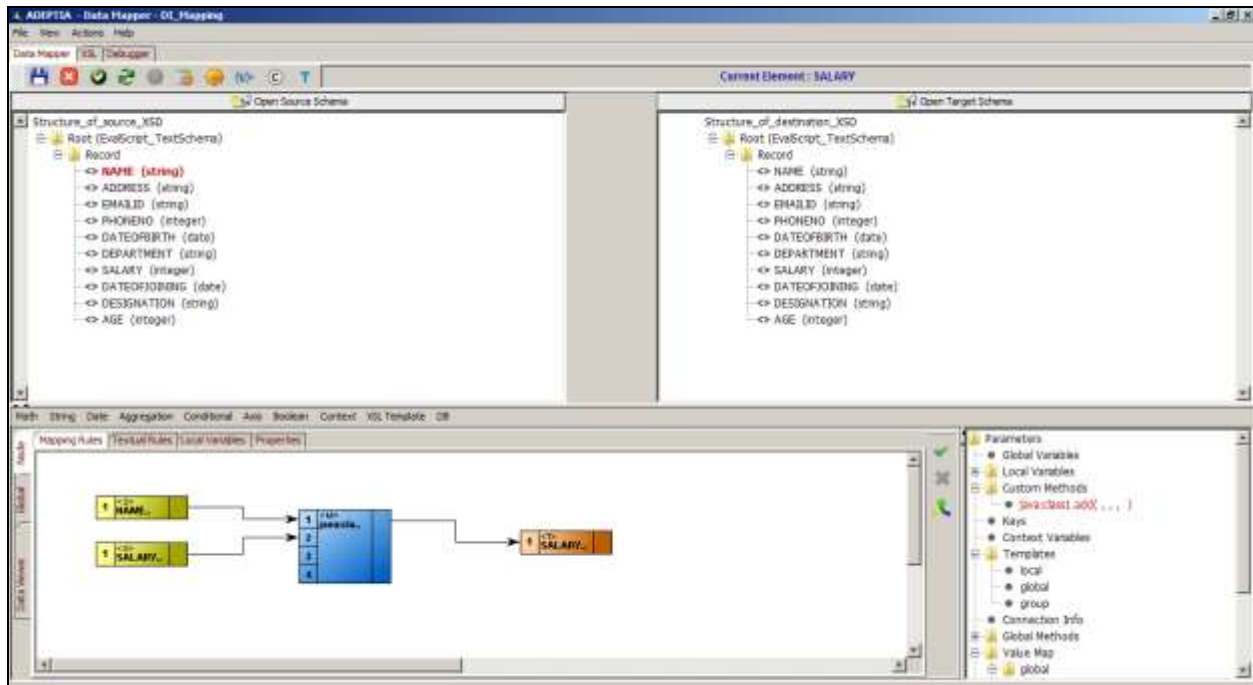
Figure 537: Create Links between Nodes

9. Click the **Apply Mapping** ( ) button. This maps the custom method to the target element.

10. Save the mapping activity and exit the Data Mapper.

> You can view and validate the generated mapping XSL, view the target XML and view and validate mapping output, before saving the mapping activity.

Dynamically Loading Custom Methods

Adeptia supports dynamic loading of custom methods in the Data Mapper. It loads the custom methods available in the Custom Classes folder, under the Global Methods node in the Parameters Panel. This enables you to access any custom method from the Data Mapper itself, without any need to specify method parameters, such as class name, method name and the number of arguments in the Data Mapper applet.

Steps to dynamically load Custom Methods

1. Copy all the class files in the Custom Classes folder and then restart the kernel.

> The current implementation of Global Methods does not support package hierarchy. So all class files that are directly placed in the Custom Classes folder, will be visible through the Global Methods node in the Parameters Panel.

2. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes. The *Global Methods* node is already displayed in the Parameters Panel, each time Data Mapper is opened (see Figure 538).
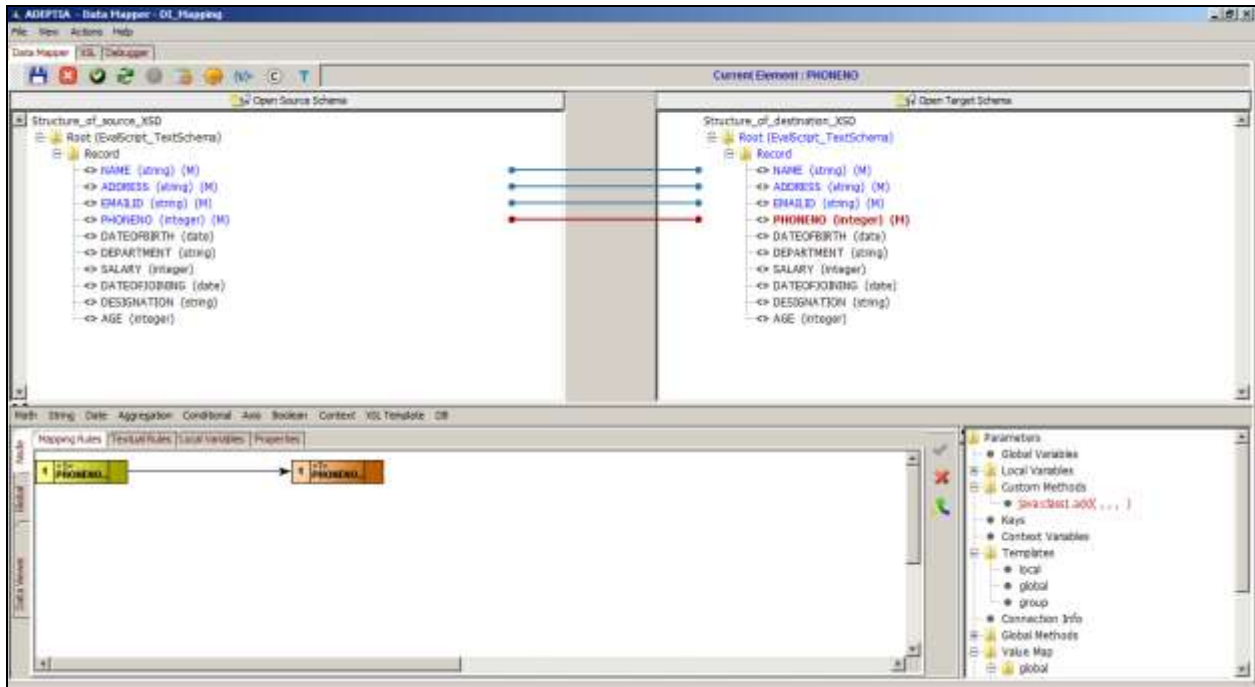
Figure 538: Global Methods Node

3. Expand the **Global Methods** node to display all the class files present in the **Custom Classes** folder (see Figure 539).
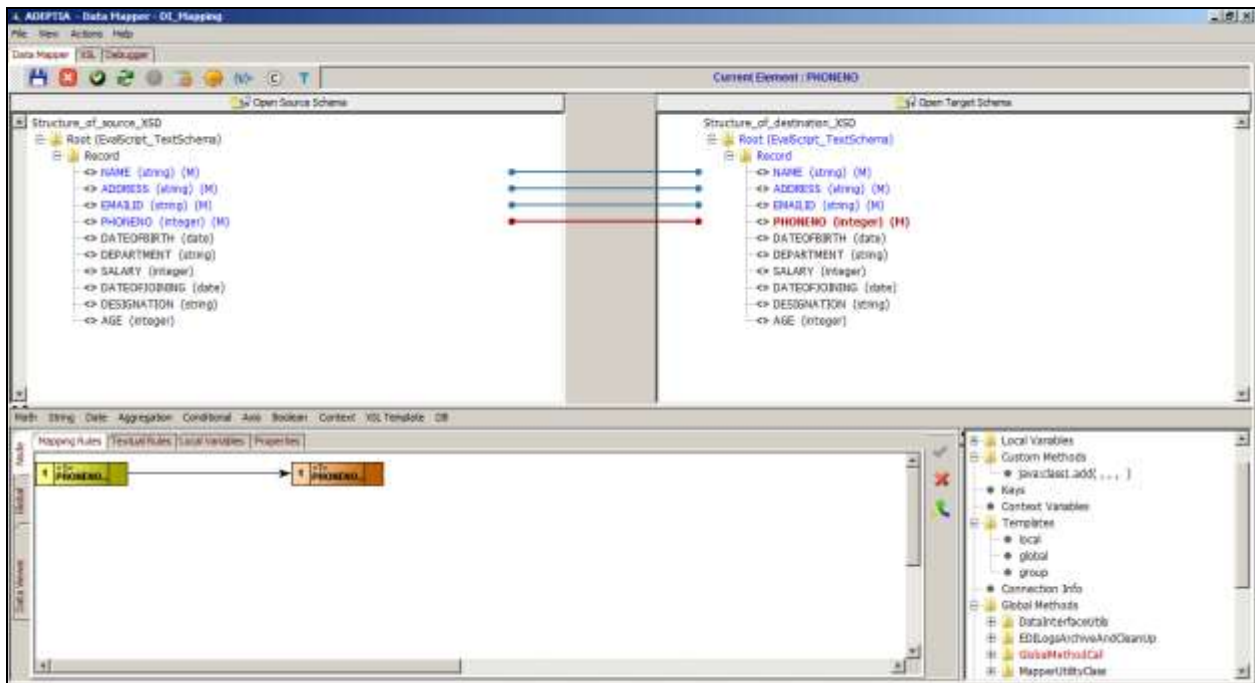
Figure 539: List of Class Files in Custom Classes Folder

4. Expand a class node to display all custom methods available for that class (see Figure 540).
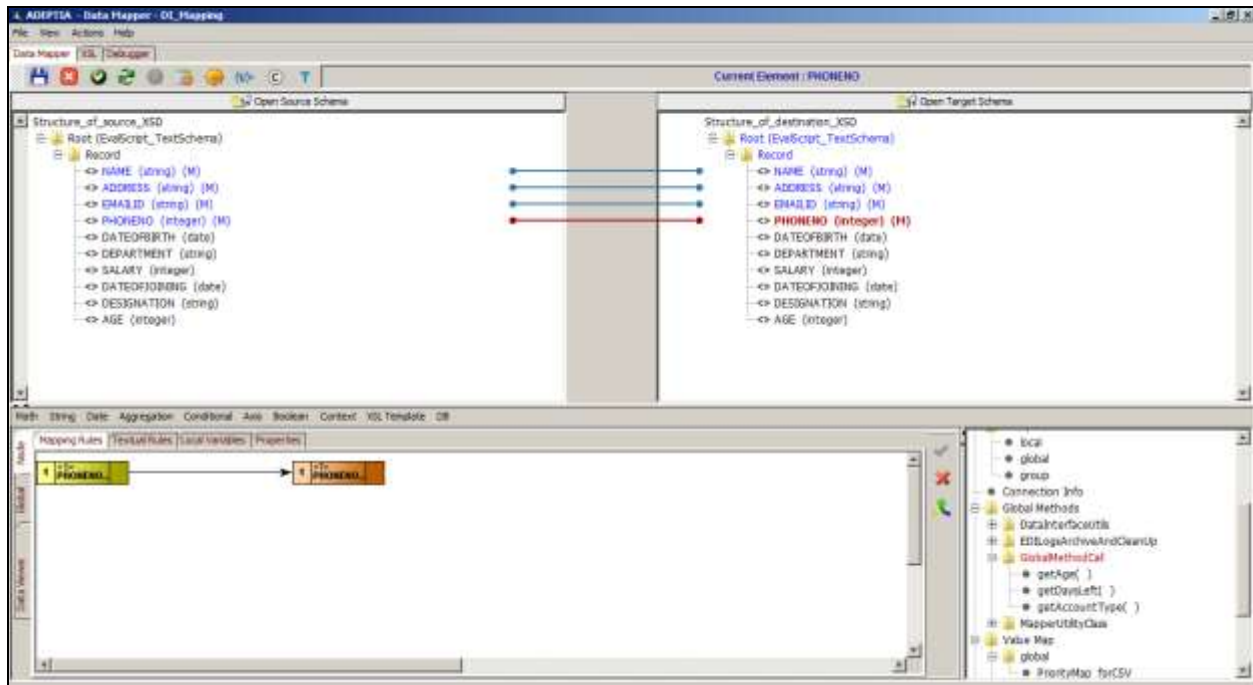
Figure 540: Custom Methods in a Custom Class

> **i** You can view more information (such as return type and parameter types) about a custom method as a tooltip, by placing the cursor over the custom method node.
>
> You can then map the custom method to a target element by double-clicking the custom method and then mapping by providing the input parameters.

Using Key Function

The *Key* function is used to extract information from two or more related input data sources. For example, if there are two input data sources: *source1* and *source2*, then the *Key* function will extract information from *source2* based on the matching field from *source1*.

Key function is always created in context of *source2* (the data source from where data needs to be fetched based on matching field). All the parameters of the *Key* function correspond to *source2* only. It has the following 3 parameters:

- **Key Name** : It is a name that you want to give to the Key function (for example, Key1))

- **Key Match** : It is the XPath of source2 that will be returned as output by the Key function . This XPath is assumed to be present in the source2 . A valid Xpath needs to be specified as this path will be returned as output. A schema name cannot be used here in the Xpath.

- **Key Use**: It is the name of the field from source2 which will be used to find the matching record from source2 based on the value passed to *Key* function. For example, if the *Key Match* is */Root/Record* and *Key Use* is *EmpID,* and if we pass value 25 to the *Key* function , then it will start scanning *EmpID* of the *source2* inside each record of *source2*. Whenever EmpID=25, the *Key* function will pass that record (*Root/Record*) as output.

Once the *Key* function is created, you need to pass the value to the *Key* function that will be used to match the *Key Use* defined for *source2* and map the output to the target element. For this, you need to use the *Key* mapping function. The syntax of the Key Mapping is :

key(,)

This function accepts 2 parameters. The first parameter is the name of the *Key* function (*Key1*) to be used and the second parameter is the actual value that will be passed to the *Key* function to perform the match on *source2*. The parameters will be:

key('key1', 25)

Once XSLT transformer finds a mapping it will call the *Key* function *Key1* and pass the value *25* to that function. The *Key* function *Key1* on receiving the mapping will pick this value *25* and start scanning *EmpID* of the *source2* inside each record of *source2*. Whenever EmpID= 25, the *Key* function will pass that record (*Root/Record*) as output.

The *Key* function always executes inside current context or nearest *For Each* that is applied to the target element where *Key* function is mapped. So if the *For Each* is applied is for *source2* on the target element, then the *Key* function will use *source2* as the data source on which EmpID scanning will be performed . So the *For Each* applied, helps the *Key* function to decide which data source to use, to perform the scanning and fetch the output.

Usage Scenario

For example, there are two source schemas: Schema_EmpDetails and Schema_Emp_incrementalDetails. There is one target schema: Schema_EmpCompleteDetails. The objective is to map the fields EmpName, EmpID ,Age, Salary, City and Email from Schema_EmpDetails and map the field Address from Schema_Emp_incrementalDetails to the target schema. The Address from the Schema_Emp_incrementalDetails is fetched using Key function and using EmpID as Key Use.

The parameters are defined as:

- Key Name: Key1
- Key Match: /Root/Record
- Key Use: EmpID

The first *For Each* is applied from record of first Schema on target Record node. This will insure that target data will contain as many records as there are in *Schema_EmpDetails*. Now *Key* mapping is used on the target *Address* element. So the deciding *For Each* (*$Input_Schema_Emp_incrementalDetails/Root*) for *Key* function is applied on this element. The *For Each* applied here is up to *Root* element only not *Record* so that only single *Address* target element is created per record . The Key mapping is defined as:

key('key1',$_varEmpID)/Address

Local variable *_varEmpID* is used as second parameter which is dynamically picking value from the EmpID of the first schema (due to *For Each* applied on target *Record* node). Once the *Key* function finds the match, it will return the matching record *Root/Record* from the second schema. Since the *Address* element is inside the *Record* element, */Address* is appended to the *Key* mapping, which becomes *Root/Record/Address*.

Using key function involves:

- [Creating a key](#)
- Mapping the Key with target element

Creating a Key

Steps to create a key

1. Ensure that the <u>source and target schemas are loaded</u> and all their elements are listed under their respective nodes.

2. Click the **Global** tab displayed in the Mapping Graph Area. All tabs of the Global tab are displayed.

3. Click the **Key Functions** tab. A list of existing keys is displayed in the Key Functions pane (see Figure 541).
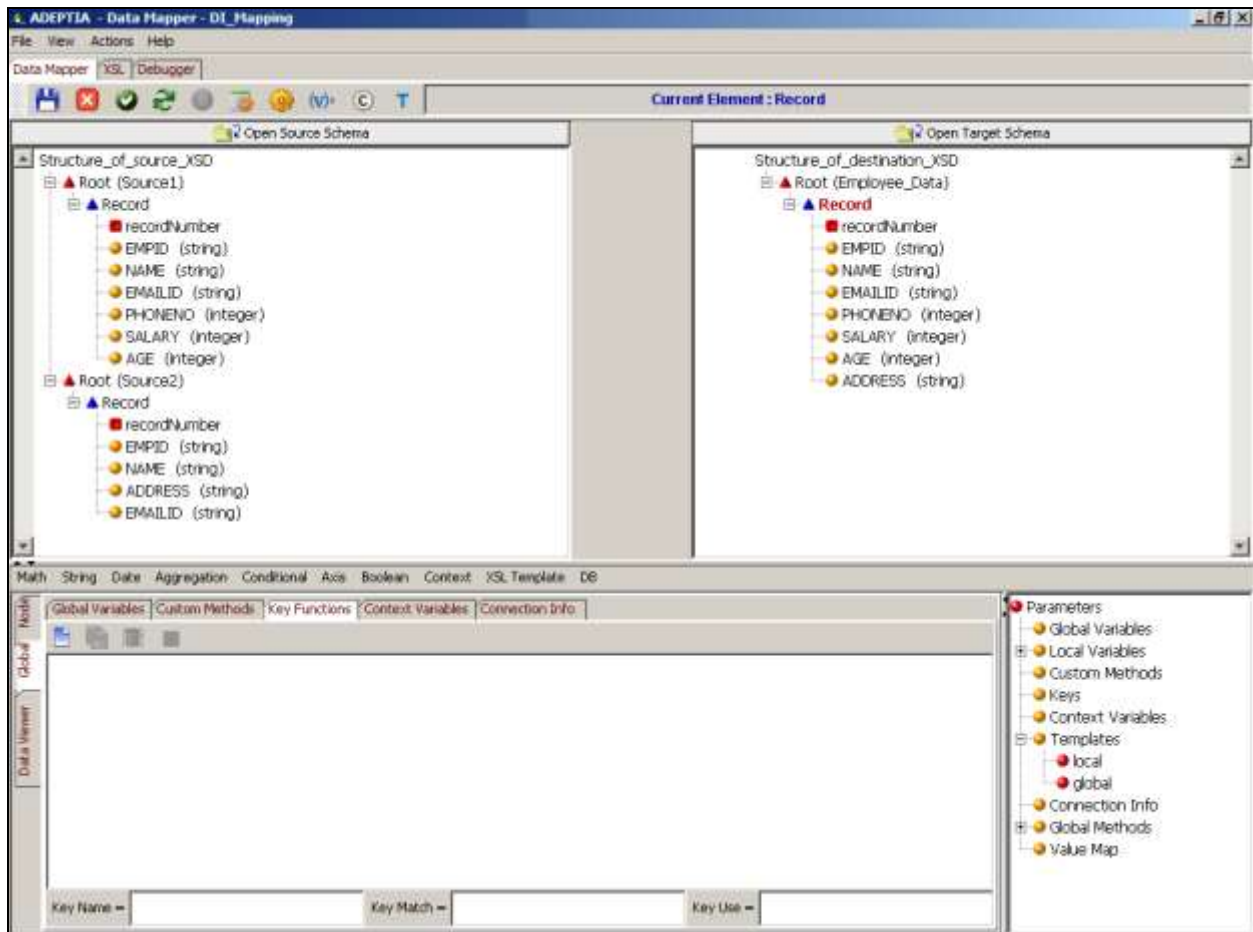
Figure 541: Key Functions Tab

4. Click the **Add Key** ( ) button to activate the **Key Name** field.

5. Enter the name of the new key in the **Key Name** field.

6. Enter the path of the source element (at the root node) to be matched, in the **Key Match** field. The path always starts with a '/'.

> Here in the field, you need not to enter the complete Xpath. In path you need to enter only the *Root* and *Record.* For example */Root/Record* .

7. Enter the name of the field to be matched in the **Key Use** field for example *EMPID.*

> **i** The **Key Match** and the **Key Use** fields are case-sensitive.

8. Click **Save Key** ( ) button to save the key. This key is added to the list of existing keys in the **Key Function** tab. It is also displayed under Keys in the Parameters Panel. (see Figure 542).
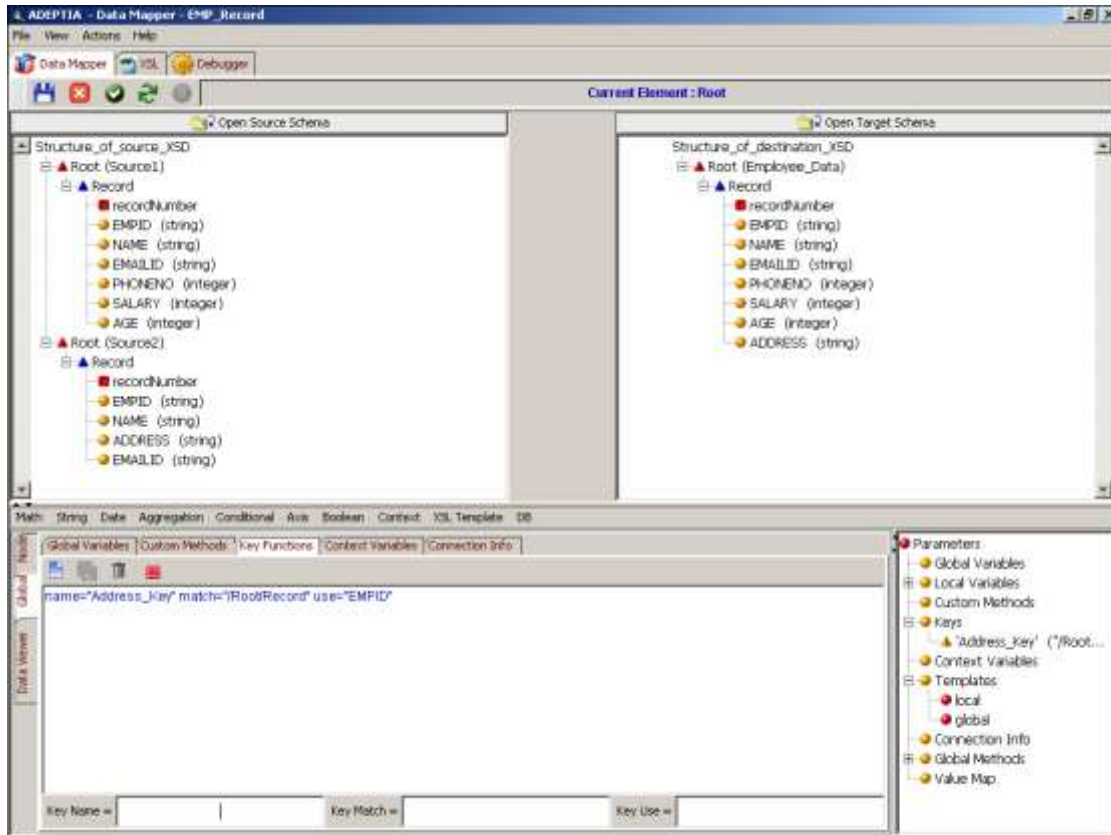
Figure 542: Key Added to Parameters Panel

9. If you shift focus to another node, or click any of the *Mapping Rules, Textual Rules, Properties, XSL* or *Debugger* tabs, without saving the key, an alert message is displayed (refer to Figure 522).

> **i** The alert message is also displayed when shifting focus between the *Global* and *Node* tabs.

10. Click **No** to save the key and shift the focus to the other object. If you click **Yes**, then the defined key is cleared and focus is shifted to the other object.

> **i** You can rearrange the keys by dragging it up or down in the list.

> **i** You can edit or delete a key from the Parameters Panel itself. For details, refer to the Managing a Global Variable from Parameter Panel section.

Mapping the Key with Target Element

Steps to use the Key Function

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Map source and target elements as displayed in figure below (see Figure 543).
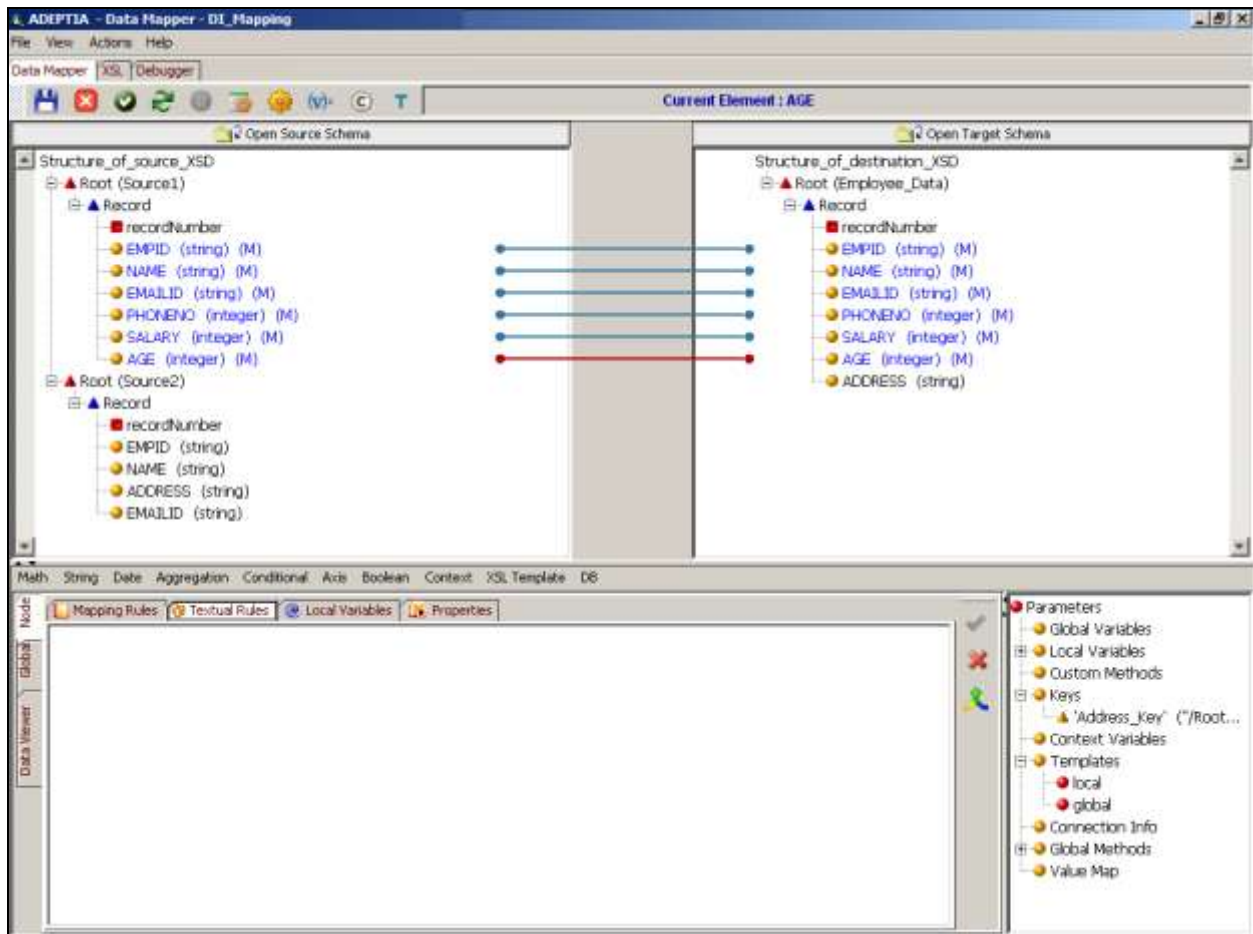
Figure 543: Map Source and Target Elements

3. Click the parent node (e.g. *Record*) of the target element and apply the *For Each* for parent node (e.g. *Record*) of schema *Source1.*

4. Create a local variable at Record level of the target schema. Select *EMPID* element of Source1 schema as the value of the variable.

5. Click *target* element (e.g. Address) on which you want to apply the key.

6. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of **the** Node tab are displayed.

7. Click the **Textual Rules** tab. The Textual Rules pane is displayed in the Mapping Graph Area.

8. Click the **Aggregation** mapping function and select the **Key** sub-function. The Key function is displayed in the Textual Rules pane (see Figure 544).
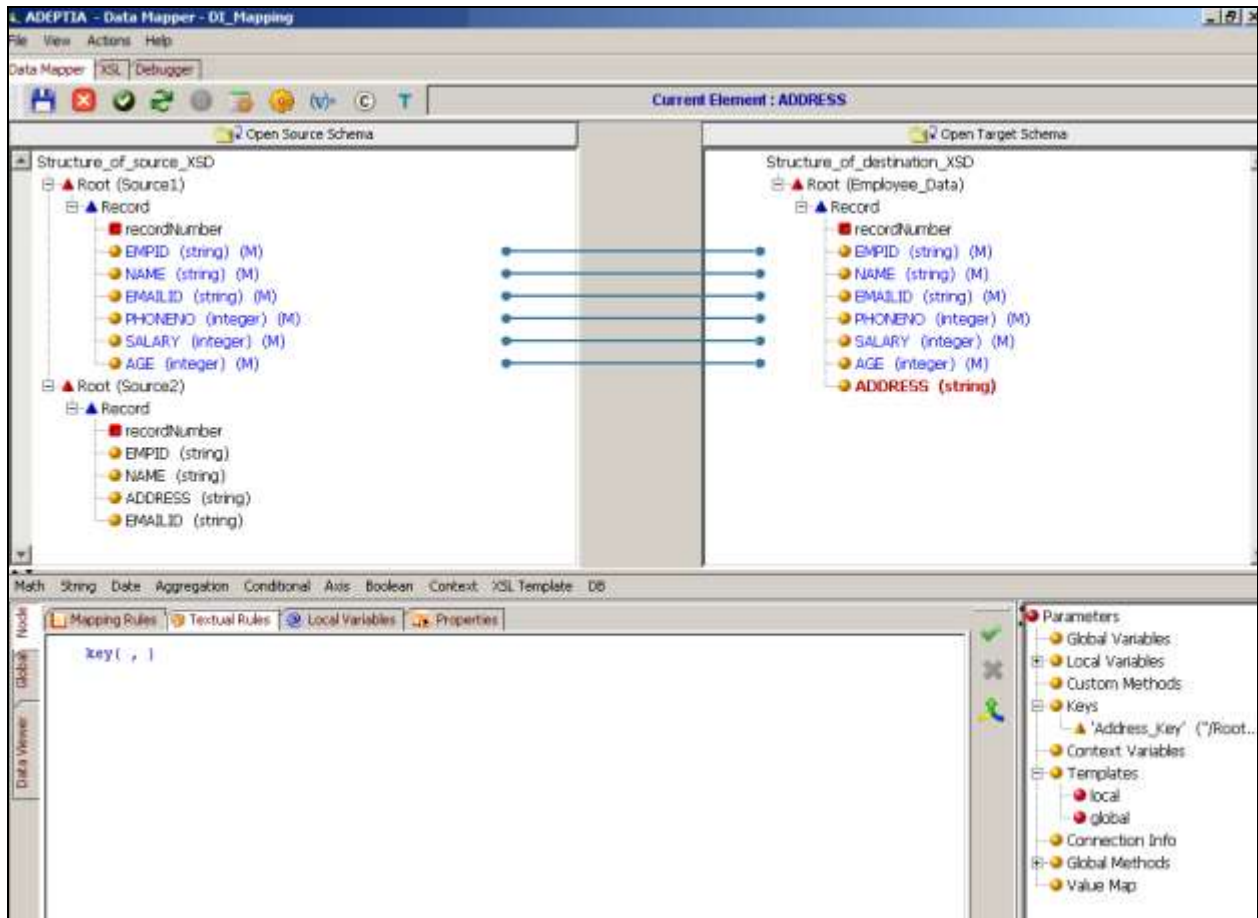
Figure 544: Key Function

9. Place the cursor, at the first argument of key function and double-click the required key that you want to apply, from *Keys* in the Parameters Panel. This is the first argument for the key function.

10. Place the cursor at the second argument of key function and double click the required *local variable*, under *Local/Ancestor Variables* in the Parameters Panel. This is the second argument for the key function.

11. The syntax of the key function in the textual rules pane will be displayed as:

    key ("key1" , $VarEmpidSource1)

12. Append the name of the element (*Address*), of the *source2* schema, which needs to be mapped to the target element (*Address*).

    Now the syntax of the mapping will be displayed as:

    key ("key1" , $ VarEmpidSource1)/Address

(see Figure 545)
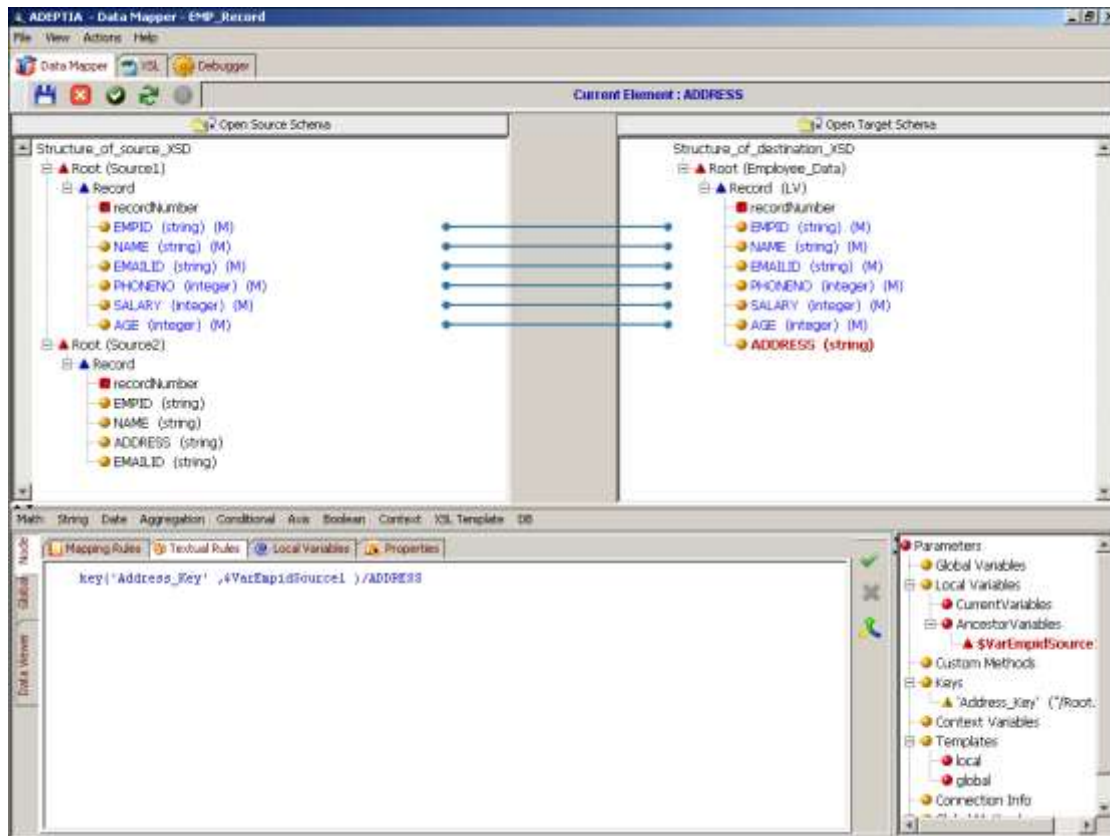
Figure 545: Map Key Function Node to Target Element

13. Click the **Apply Mapping** ( ) button. This maps the key to the address element of the target schema. If you shift the focus to another target element, or click any of the *Mapping Rules, Textual Rules, Properties, Node, XSL* or *Debugger* tabs, without applying the mapping, then an alert message is displayed (refer to Figure 522).

14. Click **No** to apply the mapping and shift focus to the other object. If you click **Yes**, then the mapping activity is cleared and is replaced by the previous mapping in the Mapping Graph Area and the focus is shifted to the other object.

15. Apply *For Each* on element *address* of target schema from Root level of *Source2* schema. This will execute key in the context of second source schema (i.e. *Source2*).

16. Save the mapping activity and exit the Data Mapper.

> You can view and validate the generated mapping XSL, view the target XML and view and validate mapping output, before saving the mapping activity.

Declaring Connection Info Variable

- Connection Info variables are used as a parameter in the DBQuery function, when extracting information from the database.

Steps to declare a Connection Info Variable

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Global** tab in the Mapping Graph Area. All tabs of the Global tab are displayed.

3. Click the **Connection Info** tab. The Connection Info Variable pane is displayed in the Mapping Graph Area (see Figure 546).
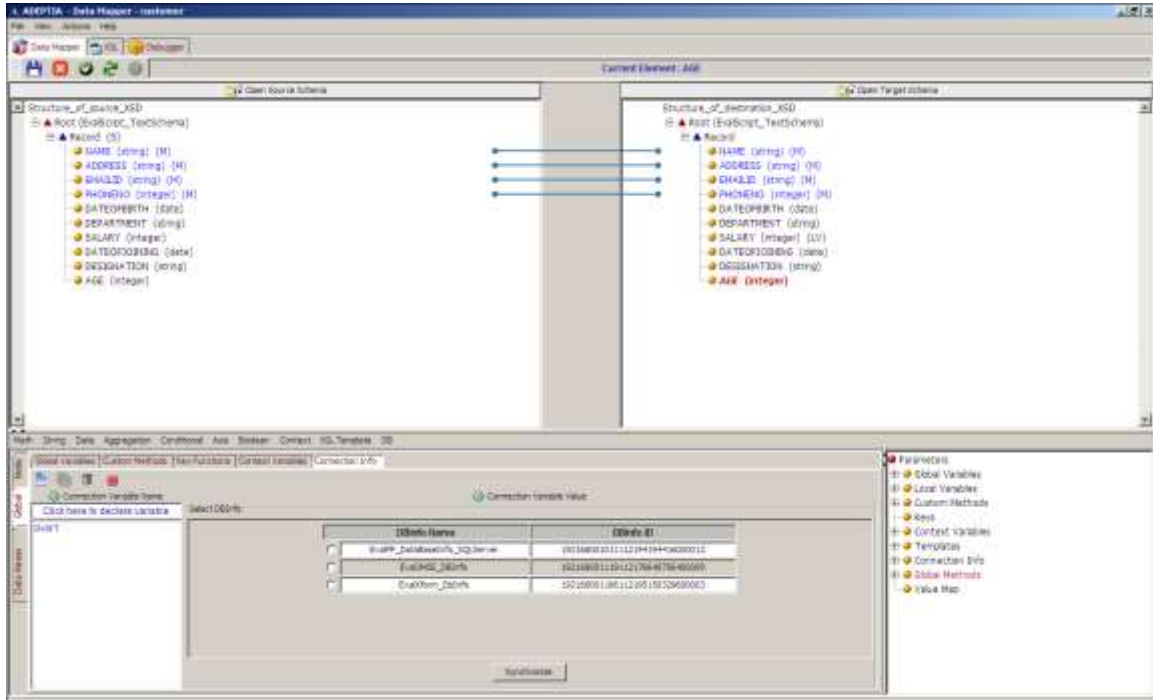
Figure 546: Connection Info Variable Pane

4. Click the **Connection Variable Name** text field and enter the name of the **Connection Info** variable you want to create (e.g. Var1). Press the **Tab** or **Enter** key. This takes the control to the **Connection Variable Value** field.

5. The Connection Info variable accepts a **DBInfo** as its value. Thus, the *Connection Variable Value* field displays a list of existing **DBInfo Names** and their **IDs**.

6. Select the **DBInfo** name that you want to assign for the *Connection Info* variable (see Figure 547).
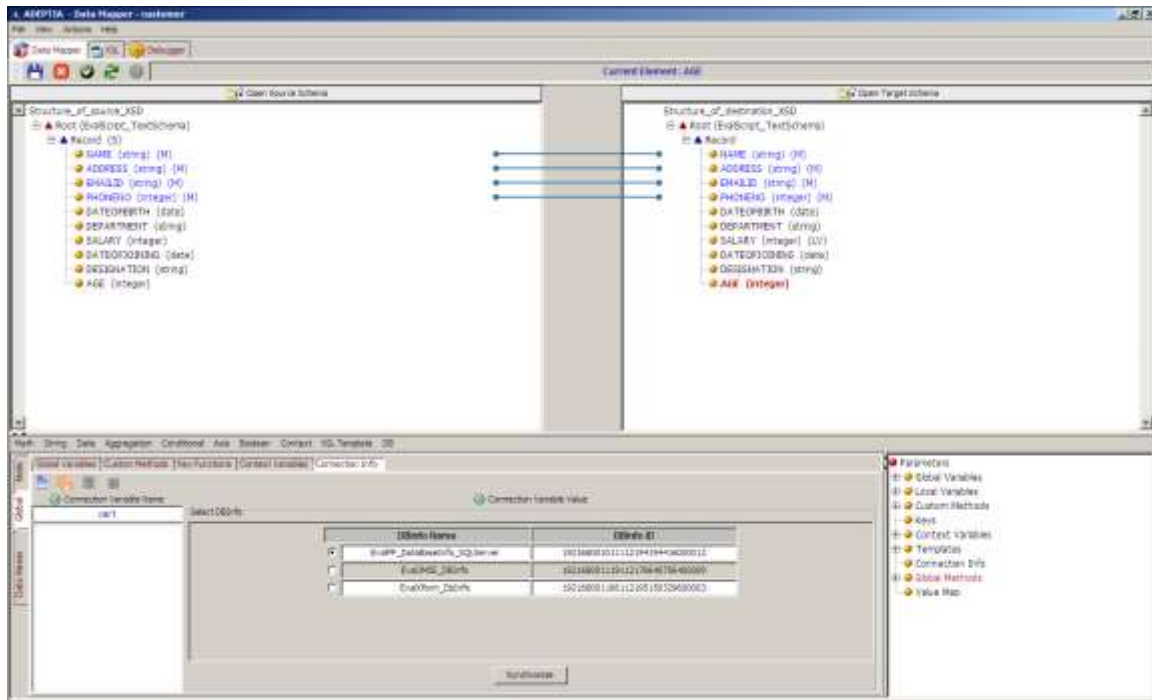
Figure 547: Enter Connection Variable Value

> ℹ️ You can click **Synchronize** to reload the **DBInfo** list.

7. Click the **Save Connection Variable** (　) button to save the *Connection Info* variable. This Connection Info variable is added to the list of existing variables in the *Connection Variable Name* field. It is also displayed under *Connection Info* in the Parameters Panel. If you shift the focus to another node, or click any of the *Mapping Rules, Textual Rules, Local Variables, Properties, XSL* or *Debugger* tabs, without saving the Connection Info variable, an alert message is displayed (refer to Figure 522).

8. Click **No** to save the Connection Info variable and shift the focus to the other object. If you click **Yes**, then the defined Connection Info variable is cleared and the focus is shifted to the other object.

> ℹ️ You can rearrange the Connection Info variables by dragging it up or down in the list.

> ℹ️ You can edit or delete a Connection Info variable from the Parameters Panel itself. For details, refer to the Managing a Global Variable from Parameter Panel section.

Setting Target Element Properties

You can set various properties of a target element.

Steps to set target element properties

1. Ensure that the [source and target schemas are loaded](#) and all their elements are listed under their respective nodes.

2. Click the *target* element for which you want to set properties.

3. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of the Node tab are displayed.

4. Click the **Properties** tab. The **Properties** pane is displayed (see Figure 548)
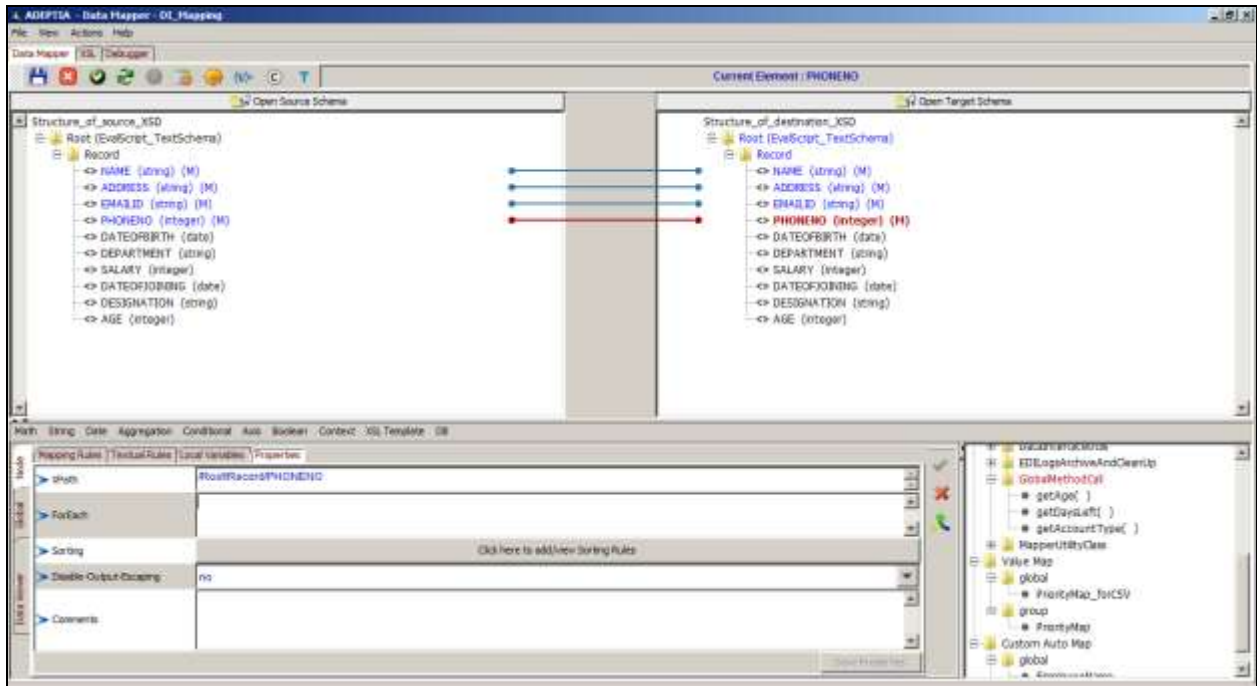
Figure 548: Properties Pane

5. The Properties pane comprises of various properties, which are outlined in the table below.

Table 22: Properties of a Target Element

Property	Description
XPath	Displays the XPath of the selected target element. It is a read-only field.
For Each	Sets the For Each property for the target element. It is used to repeat occurrences of a target element depending on the total occurrences of a source element in the source file. To set the For Each property refer to the section Setting the For Each Property.
Sorting	Sets the Sorting rules for the target element. It also allows you to view or remove sorting rules for the target element. To set the Sorting Rules, refer to the section Setting Sorting Rules.
Disable-Output-Escaping	Sets the disable-output –escaping property for the target element. It is used to include this property under the 'value-of' element in the generated XSL. By default, this property is set as 'no'. For details on this property, refer to the

Property	Description
	section Using XSL Property.
Comments	Displays comments entered for the target element. This is a data entry field and allows you to enter comments for the target element. To enter comments, refer to the section Adding Comments for Target Element.

6. Enter the properties required for the selected target element.

7. Click **Save Properties** to save the properties entered for the target element. If you shift focus to another node, or click any of the *Mapping Rules, Textual Rules, Global Variables, Properties, XSL* or *Debugger* tabs, without saving the properties, an alert message is displayed (refer to Figure 522).

8. Click **No** to save the properties and shift focus to the other object. If you click **Yes**, then the defined properties are cleared and the focus is shifted to the other object.

Setting For Each Property

The *For Each* property is used to repeat the occurrences of a target element or node, depending on the total occurrences of a source element or a node in the source file.

For example, an XML schema with a node customer has three elements, first_name, last_name, and state. This schema is used both at the source and at the target end.

Supposing, the source file has 10 occurrences of the customer. Applying the For Each property on the target node customer, for the source node customer, generates an output file containing 10 occurrences of the customer in it.

> **ⓘ** If *For Each* property is not used, an output file is generated with only one occurrence of customer in it.
>
> *For Each* and *Apply Template* both cannot be used simultaneously on one node.

Steps to set the For Each property

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the *target* element for which you want to set the For Each property.

3. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of the **Node** tab are displayed.

4. Click **Properties** tab. The **Properties** pane is displayed (refer to Figure 548).

5. Click the **For Each** property field and then double-click the *source* element using which you want to apply the **For Each** property. This displays the entire path of the source element in the **For Each** field (see Figure 549).
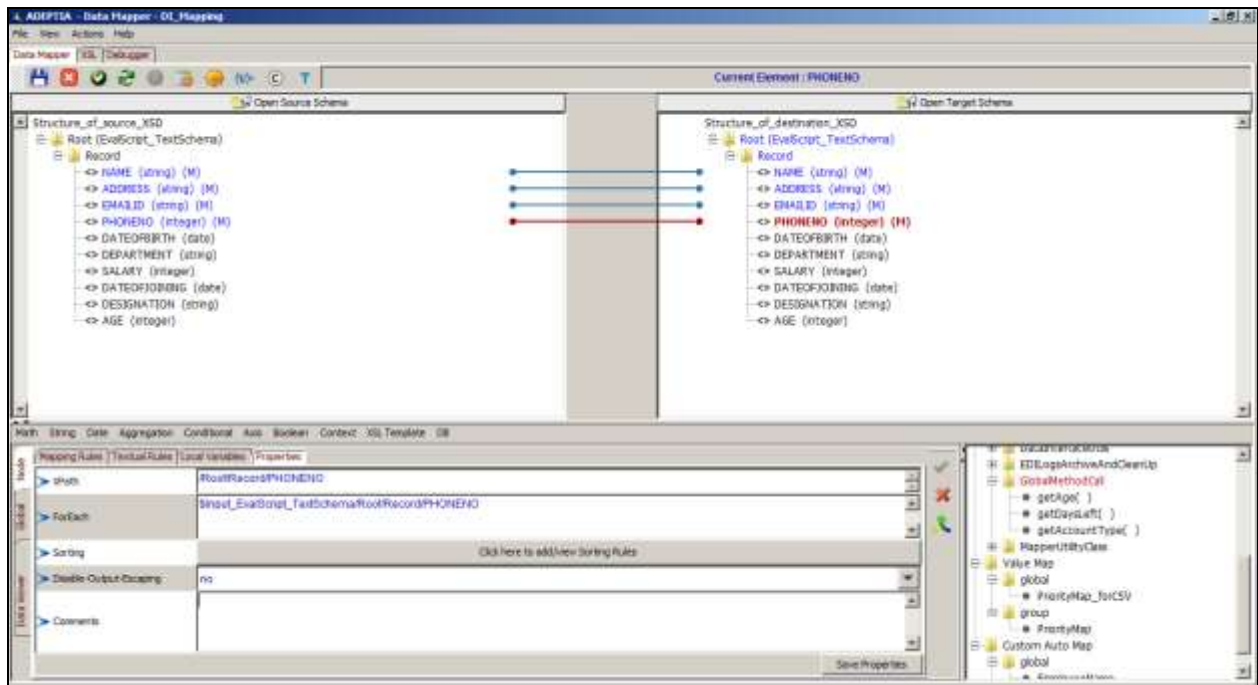
Figure 549: Source Element in For Each Property

> ℹ️ You can set the *For Each* property on more than one source element. You can use the |
> character as a separator between the XPath of each source element.

6. Click **Save Properties**. This applies the **For Each** property for the selected target element. If you shift focus to another node, or click any of the *Mapping Rules, Textual Rules, Global Variables, Properties, XSL* or *Debugger* tabs, without saving the For Each property, an alert message is displayed (refer to Figure 522).

7. Click **No** to save the For Each property and shift focus to the other object. If you click **Yes**, then the defined For Each property is cleared and the focus is shifted to the other object.

> ℹ️ Once the **For Each** property is applied to a target element, the letter **(F)** is displayed next to the target element. Refer to <u>Table of Suffixes</u> for details on suffixes displayed next to a target element.

> ℹ️ To remove the **For Each** property from the target element, right-click *target* element and select **Remove Mappings** option. This displays the **Remove Mapping Options** dialog box. Select the **Remove For Each** checkbox and click **OK**.

Adding Comments to Target Schema Elements

Comments are used to provide additional information to target nodes and elements. Comments are displayed as tool tips and are reflected in the XSL generated under the *XSL* tab.

Steps to add a comment to the target element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the *target* element for which you want to add a comment.

3. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of the Node tab are displayed.

4. Click the **Properties** tab. The Properties pane is displayed (refer to Figure 548).

5. Click the *Comments* property field and enter the comment for the selected target element (see Figure 550)
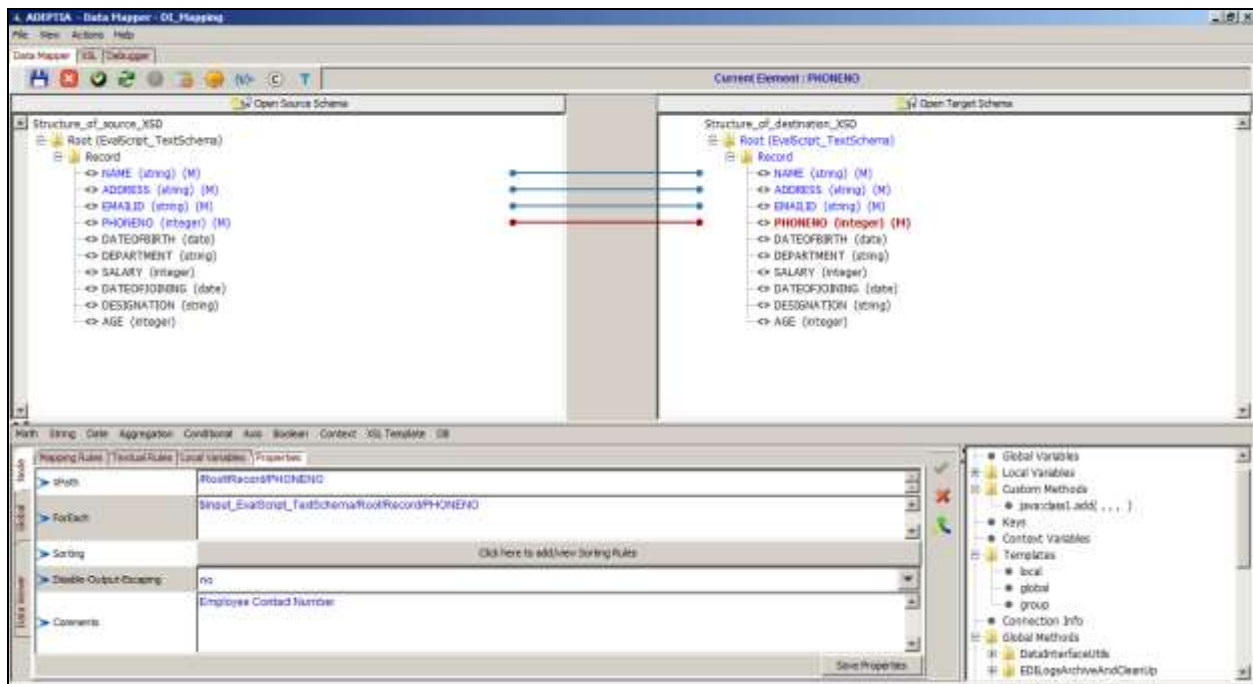
Figure 550: Enter Comment

6. Click **Save Properties**. This adds the comment and displays it next to the target element. If you shift focus to another node, or click any of the *Mapping Rules, Textual Rules, Global Variables, Properties, XSL* or *Debugger* tabs, without saving the comments, an alert message is displayed (refer to Figure 522).

7. Click **No** to save the comments and shift focus to the other object. If you click **Yes**, then the defined comments are cleared and the focus is shifted to the other object.

> ℹ️ Once a comment is added to a target element, the letter **(CM)** is displayed next to the target element. This signifies that a comment has been created for the target element. Refer to Table of Suffixes for details on suffixes displayed next to a target element.

Setting Sorting Rules

You can set sorting rules for a target element. It is used to sort value of elements in the generated output. While generating the output XML, the value of elements can be sorted either in ascending or descending order. For example, records of the employee can be sorted based on their salaries. Figure 551 shows input XML before sorting.

```
<?xml version="1.0" encoding="UTF-8" ?>
```

```xml
- <employees>
- <employee attribute="14" attribute1="15">
  <TESTCASENO>TESTCASENO1</TESTCASENO>
  <DESCRIPTION>DESCRIPTION1</DESCRIPTION>
  <NAME>John</NAME>
  <ADDRESS>Address1</ADDRESS>
  <EMAILID>EMAILID1</EMAILID>
  <PHONENO>PHONENO1</PHONENO>
  <DOB>DOB1</DOB>
  <DEPT>DEPT1</DEPT>
  <SALARY>10000</SALARY>
  <DOJ>DOJ1</DOJ>
  <DESIGNATION>DESIGNATION1</DESIGNATION>
  <AGE>34</AGE>
  </employee>
- <employee attribute="14" attribute1="15">
  <TESTCASENO>TESTCASENO2</TESTCASENO>
  <DESCRIPTION>DESCRIPTION2</DESCRIPTION>
  <NAME>David</NAME>
  <ADDRESS>ADDRESS2</ADDRESS>
  <EMAILID>EMAILID2</EMAILID>
  <PHONENO>PHONENO2</PHONENO>
  <DOB>DOB2</DOB>
  <DEPT>DEPT2</DEPT>
  <SALARY>8000</SALARY>
  <DOJ>DOJ2</DOJ>
  <DESIGNATION>DESIGNATION2</DESIGNATION>
  <AGE>45</AGE>
  </employee>
- <employee attribute="14" attribute1="15">
  <TESTCASENO>TESTCASEN3</TESTCASENO>
  <DESCRIPTION>DESCRIPTION3</DESCRIPTION>
  <NAME>Ricky</NAME>
  <ADDRESS>ADDRESS3</ADDRESS>
  <EMAILID>EMAILID3</EMAILID>
  <PHONENO>PHONENO3</PHONENO>
  <DOB>DOB3</DOB>
  <DEPT>DEPT3</DEPT>
  <SALARY>15000</SALARY>
  <DOJ>DOJ3</DOJ>
  <DESIGNATION>DESIGNATION3</DESIGNATION>
  <AGE>36</AGE>
  </employee>
  </employees>
```
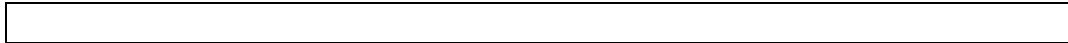
Figure 551: Sample Input XML

Figure 552 shows the Output XML after sorting.

```
<?xml version="1.0" encoding="UTF-8" ?>
- <employees xmlns:java="http://xml.apache.org/xslt/java" xmlns:str="http://exslt.org/strings">
- <employee attribute="" attribute1="">
  <TESTCASENO>TESTCASEN3</TESTCASENO>
  <DESCRIPTION>DESCRIPTION3</DESCRIPTION>
  <NAME>Ricky</NAME>
  <ADDRESS>ADDRESS3</ADDRESS>
  <EMAILID>EMAILID3</EMAILID>
  <PHONENO>PHONENO3</PHONENO>
  <DOB>DOB3</DOB>
  <DEPT>DEPT3</DEPT>
  <SALARY>15000</SALARY>
  <DOJ>DOJ3</DOJ>
  <DESIGNATION>DESIGNATION3</DESIGNATION>
  <AGE>36</AGE>
  </employee>
- <employee attribute="" attribute1="">
  <TESTCASENO>TESTCASENO1</TESTCASENO>
  <DESCRIPTION>DESCRIPTION1</DESCRIPTION>
  <NAME>John</NAME>
  <ADDRESS>Address1</ADDRESS>
  <EMAILID>EMAILID1</EMAILID>
  <PHONENO>PHONENO1</PHONENO>
  <DOB>DOB1</DOB>
  <DEPT>DEPT1</DEPT>
  <SALARY>10000</SALARY>
  <DOJ>DOJ1</DOJ>
  <DESIGNATION>DESIGNATION1</DESIGNATION>
  <AGE>34</AGE>
  </employee>
- <employee attribute="" attribute1="">
  <TESTCASENO>TESTCASENO2</TESTCASENO>
  <DESCRIPTION>DESCRIPTION2</DESCRIPTION>
  <NAME>David</NAME>
  <ADDRESS>ADDRESS2</ADDRESS>
  <EMAILID>EMAILID2</EMAILID>
  <PHONENO>PHONENO2</PHONENO>
  <DOB>DOB2</DOB>
  <DEPT>DEPT2</DEPT>
  <SALARY>8000</SALARY>
```

```
<DOJ>DOJ2</DOJ>
<DESIGNATION>DESIGNATION2</DESIGNATION>
<AGE>45</AGE>
</employee>
</employees>
```

Figure 552: Output XML

> The Sorting rules can be set only for record where *For Each Mapping* or *Apply Template* is used. The *<xsl:apply-templates>* element applies a template to the current element or to the child nodes of the current element, when the parent elements of source and target schemas are mapped.

Steps to set Sorting Rules

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Ensure that the source and target elements to be mapped are selected and displayed in the Mapping Graph Area.

3. To use Apply template, click *Employee* (parent) element in the source panel and drag the mouse pointer to the *Employee* (parent) element in the target panel.

A line is displayed between the source and target panels indicating the mapping between source and target elements (see Figure 553).
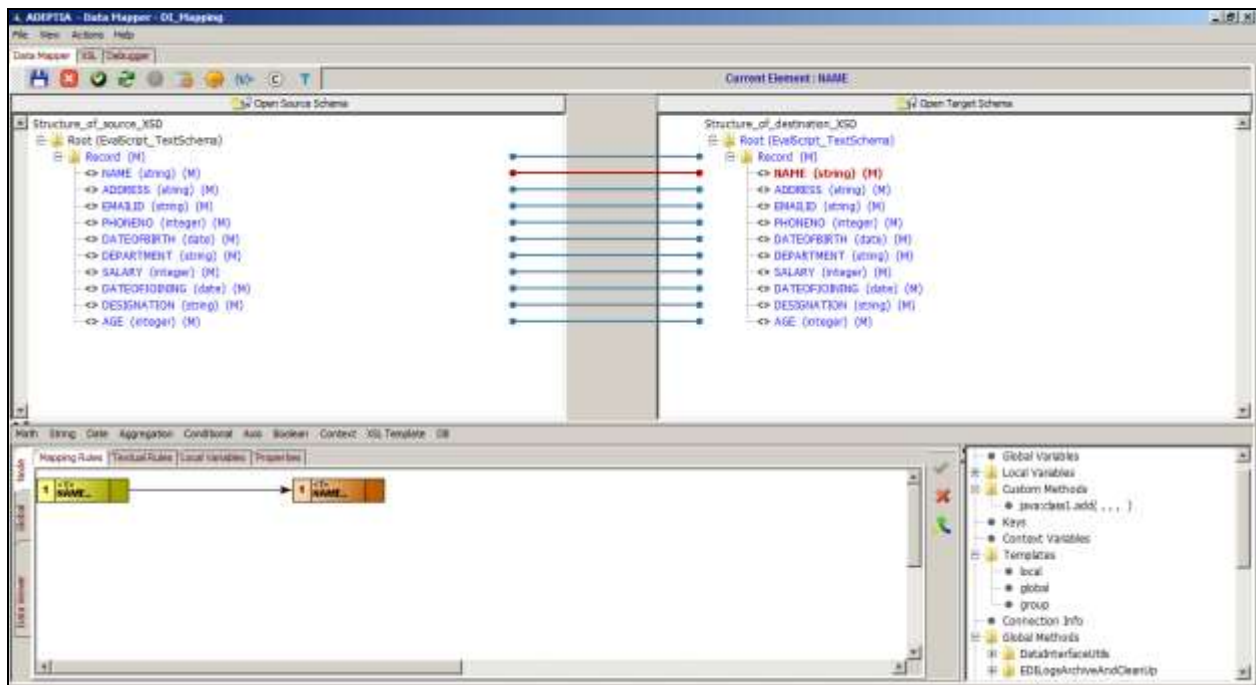
Figure 553: Apply Template

> ℹ️ To learn how to set For Each property on employee element refer to the section Setting For Each Property.

4. Click the **Node** tab displayed in the Mapping Graph Area. All tabs of the Node tab are displayed.

5. Click the **Properties** tab. The **Properties** pane is displayed (refer to Figure 548).

6. Click the **Click here to add/view Sorting Rules** option displayed against the **Sorting** property field. This displays the **Add New Sorting Rules** dialog box (see Figure 554)
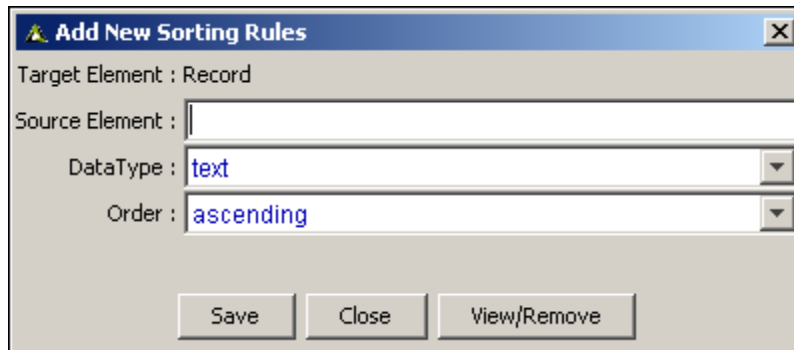
Figure 554: Sorting Rules Dialog Box

This screen displays the name of the selected target record to be sorted.

7. Type the name of the source element on the basis of which you want to sort output (e.g. SALARY), in the **Source Element** field.

8. Select the data type as either text or numeric from the **Data Type** dropdown list. This specifies how the input value is to be interpreted. By default, text is selected.

9. Select the sorting order as ascending or descending from the **Order** dropdown list. By default, ascending is selected.

10. Click **Save** to save the sorting rule.

11. Click C**lose** to return the **Data Mapper** screen. The letter **(SR)** is displayed next to the sorted target element. This signifies that the target element has been sorted based on the specified source element. Refer to the Table of Suffixes for details on suffixes displayed next to an element.

> ℹ️ More than one sorting can also be applied to a single target element. For example, if salary of two employees is same, they can be further sorted out based on their age.
>
> To delete sorting, click **View/Remove** button. The **Remove Sorting Rules** dialog box is displayed with a list of existing sorting rules. Select sorting rule and click **Remove/Remove All** to delete sorting rules.

Once the sorting is applied based on the set rules, the output XML is displayed as displayed in Figure 552.

Filtering of Elements/Attributes in Target Data

You can filter elements or attributes from appearing in the target XML. There are two ways to filter data:

6. Using IFF Condition

7. Using Apply Filter checkbox from right-click popup menu

> ℹ The **Apply Filter** checkbox method is recommended as it is easy to use and can be done individually on multiple nodes, directly from the data mapper applet.

Using Apply Filter Checkbox

Steps to filter using Apply Filter Checkbox

1. Ensure that the [source and target schemas are loaded](#) and all their elements are listed under their respective nodes.

2. Right-click the *target* element that you want to filter, and mark the **Apply Filter** checkbox as checked (see Figure 555). By default, this checkbox is disabled.
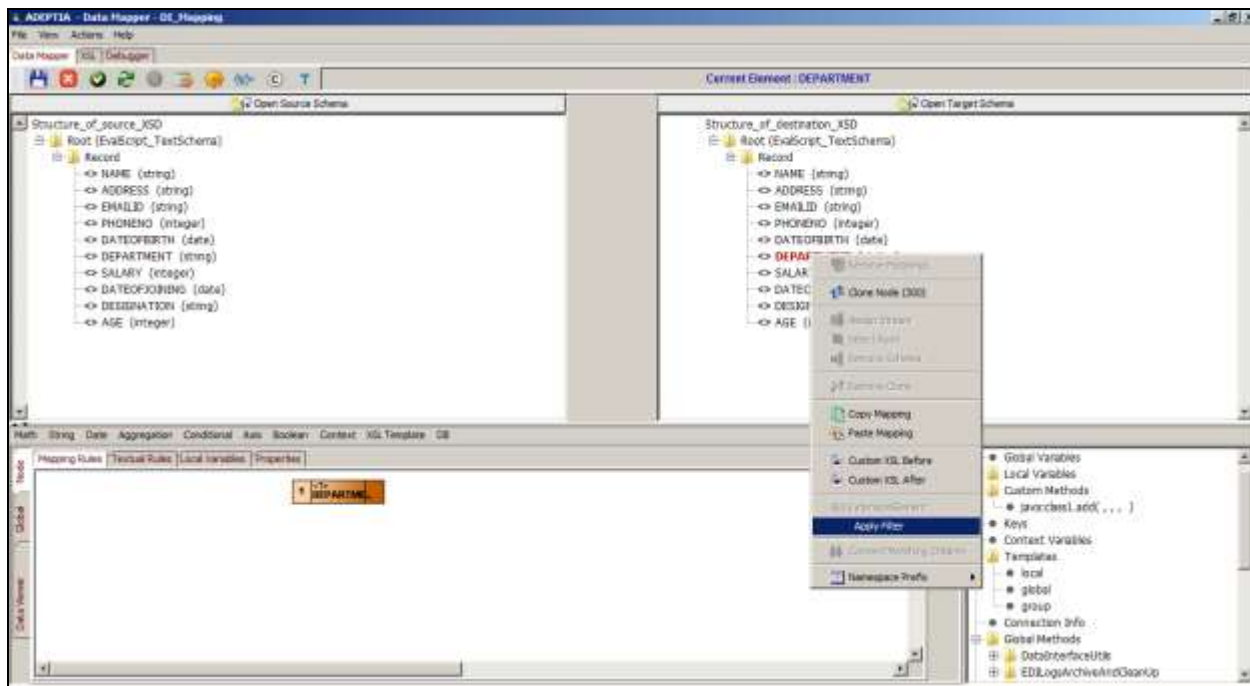
Figure 555: Checking Apply Filter Checkbox

3. This selection will filter the selected element from the target output XML data. You can uncheck this checkbox anytime to display the element in the target data.

> ℹ You can apply this filtering option on the element or attribute levels.

> ℹ Once the filter is applied on the target element, the letters (FL) are displayed next to each filtered target element. This signifies that the filter has been applied for the target element. Refer to [Table of Suffixes](#) for details on suffixes displayed next to an element.

Creating Clone of Target Element

Cloning means generating replicas of the target elements or nodes. You can create clones of all target elements.

Steps to create a clone

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the *target* element and select the **Clone Node** option.

> ℹ️ You can create a clone of all target nodes except the root node. Thus, the *Clone Node* sub-option is displayed as inactive for the root node.

3. The element which is created using cloning is displayed with the suffix [1] after its name. Subsequent clones that are created for that element will have the suffix [2] and so on. You can create a maximum of 300 occurrences of an element, with one main element and 299 clones.

Removing Clone of Target Element

Steps to remove a clone

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the cloned element that you want to remove and select the **Remove Clone** option. A screen is displayed confirming the removal of the selected clone (see Figure 556).
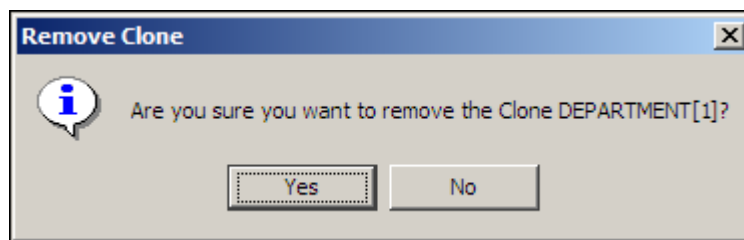
Figure 556: Confirm Remove Clone

3. Click **Yes** to remove the clone. This removes the selected clone from the target schema.

> ℹ️ If more than one clone has been created for an element, then you need to remove the clones in descending order.

Adding a Character Data (CData) Section

The XML parsers normally parse the complete text in an XML document i.e., when an XML element is parsed, the text data between the XML tags is also parsed. Consider the following example:,

```
<message>This text will also be parsed</message>
```

In this example, the message between the <message> and </message> text will normally be parsed by the XML parser. Consider another example:

```
<name><first>Hello</first><last>User!</last></name>
```

In this example also, the XML parser will break the XML tags and parse the text data as Hello User!

The text data that is parsed by the XML parser is termed as Parsed Character Data or PCData.

However, the user may require to add some text data that should not be parsed by the XML parser. The Character Data or CData is the text data that should not be parsed by the XML parser. CData is also termed as Unparsed Data.

Adeptia Suite enables you to add a CData section with the target schema. The text data inside a CDATA section is ignored by the parser.

A CDATA section starts with "<![CDATA[" and ends with "]]>". CDATA sections are useful for writing XML code as text data within an XML document.

> A CDATA section cannot contain the string "]]>" and therefore it is not possible for a CDATA section to contain nested CDATA sections.
>
> You can use multiple CDATA sections by splitting each occurrence of the "]]>"just before the ">".

Steps to add a CData section

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click **Actions** menu and select the option **CData Section Elements** (see Figure 559).
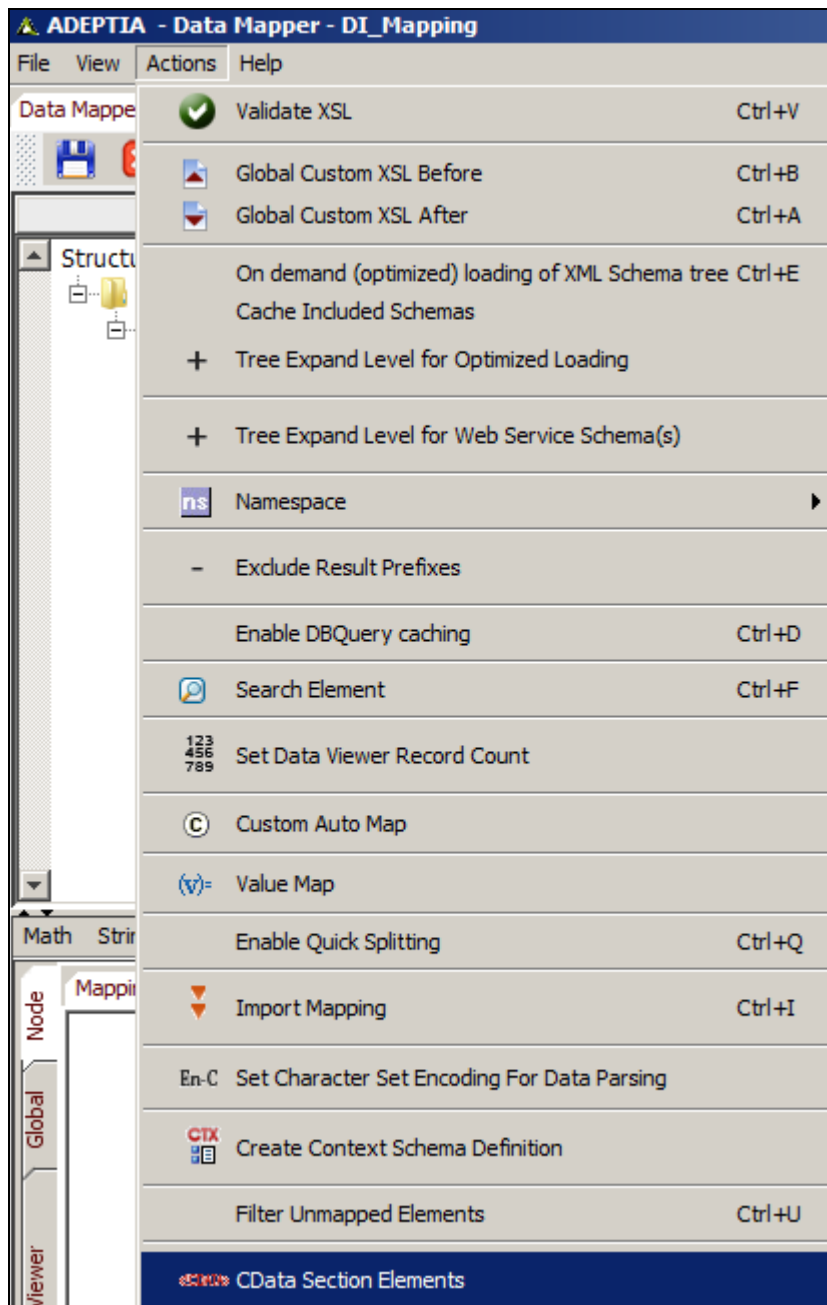
Figure 557: CData Section Elements

3. The CData Section Elements dialog is displayed (see Figure 558).
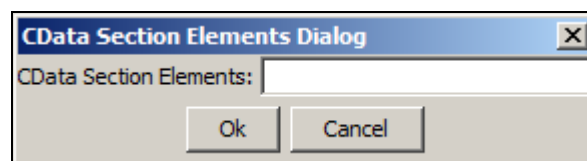
Figure 558: CData Section Elements Dialog

Removing Schema

You can remove a schema from the source or target panels. If a source or target schema is removed, everything associated with the mapping of the schema such as Mapping Graph Area, Connection Lines or For Each property is removed.

Steps to remove a schema

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the *root* element of the schema that you want to remove and select the **Remove Schema** option. A screen is displayed confirming the removal of the selected schema (see Figure 559).
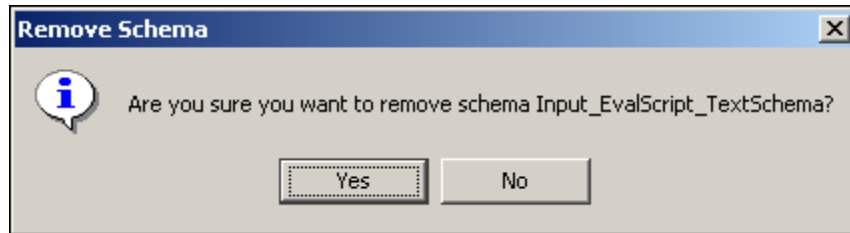
Figure 559: Confirm Remove Schema

3. Click **Yes** to remove the schema. This removes the selected clone from the target schema.

> A schema can be removed only from the root element. Thus, the *Remove Schema* option is displayed as active only for the root element.

Adding Custom XSL

At times, you may want to add some additional specialized XSL to a target element, or at the top or bottom of the mapping XSL. You can do this by adding custom XSL code.

Steps to add custom XSL code for a Target Element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the *target* element and select the **Custom XSL Before** option (see Figure 560).
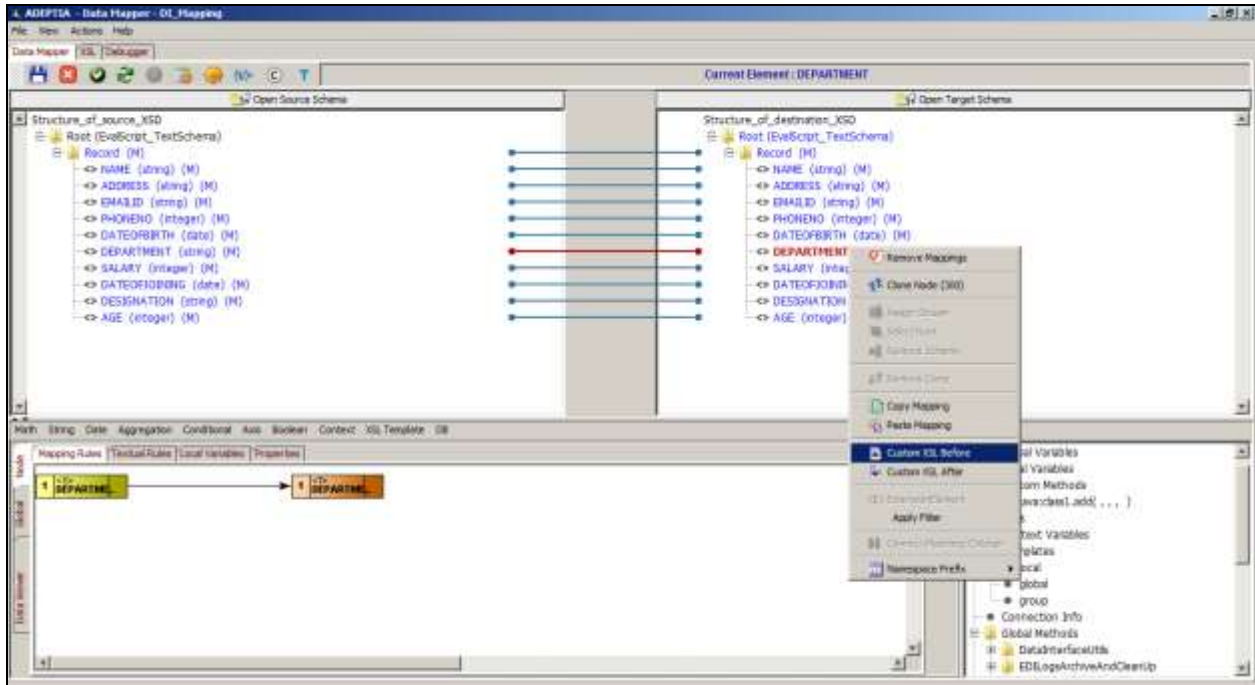
Figure 560: Select Custom XSL Before Option

3. The *Add Custom XSL Before* screen is displayed for the target element. Enter the custom XSL code for the target element (see Figure 561).
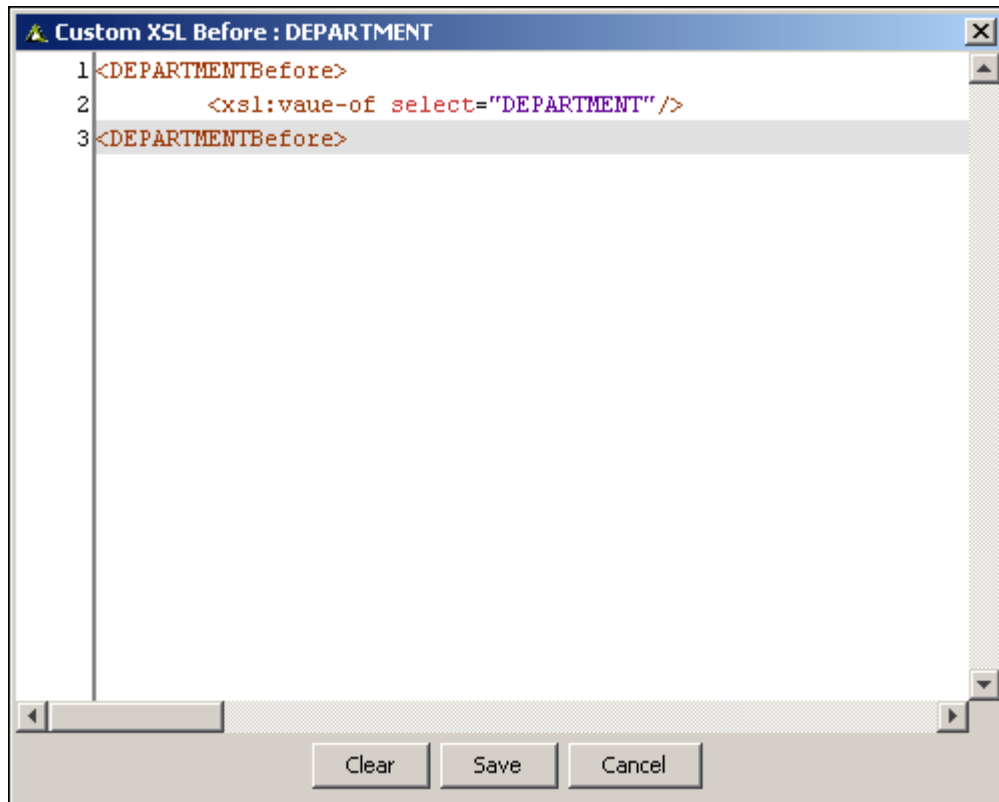
Figure 561: Enter Custom XSL Code

4. Click **Save** to save the XSL code and close the screen. Alternately, click **Clear** to clear the XSL code, or **Cancel** to close the screen without saving the changes.

> ℹ️ Similarly, you can add custom XSL code after a target element, by selecting **Custom XSL After** option from the right menu (refer to Figure 560).

Steps to add global custom XSL code

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Actions** menu and select **Global Custom XSL Before** option (see Figure 562).
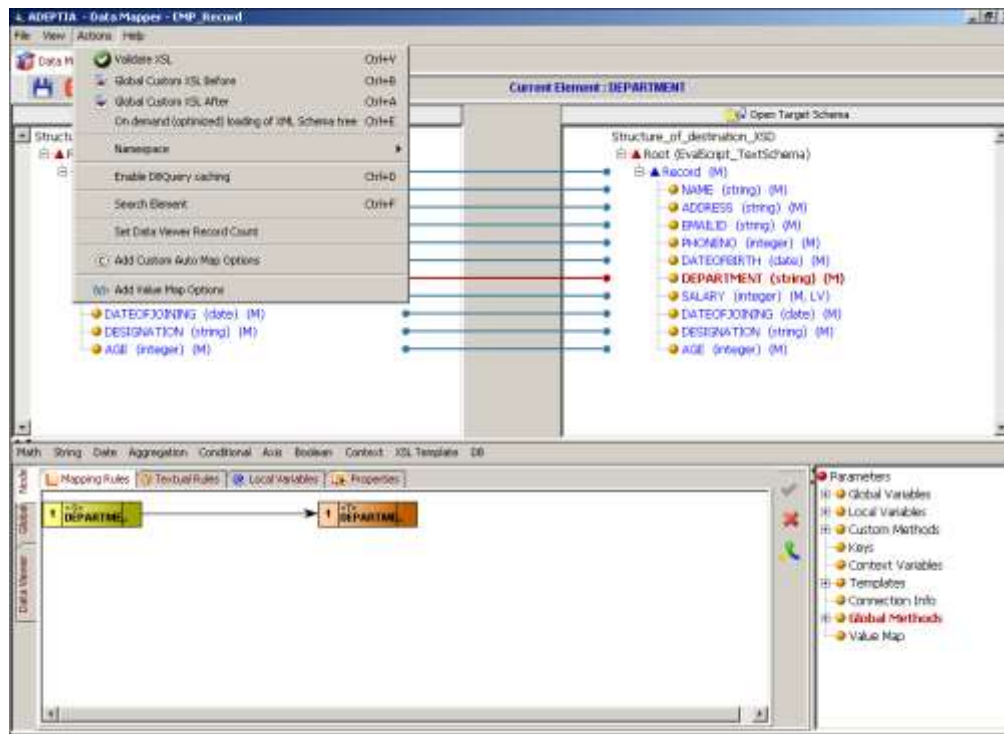
Figure 562: Select Global Custom XSL Before Option

3. The **Add Global Custom XSL Before** screen is displayed. Enter the global custom XSL code (see Figure 563).
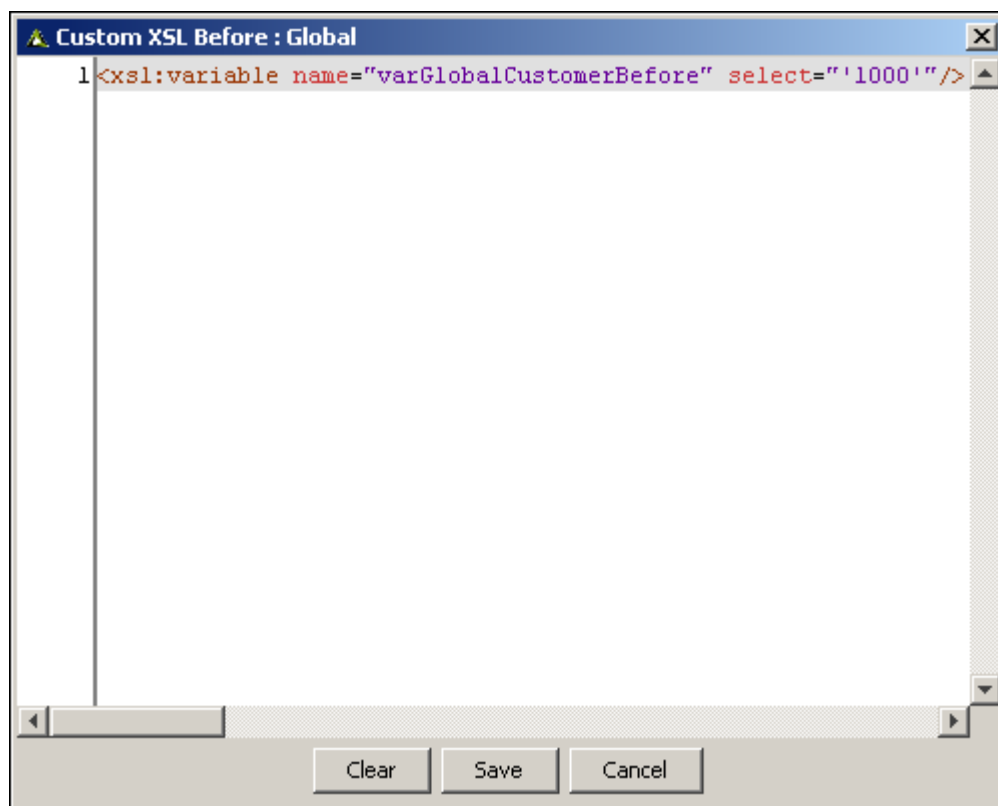
Figure 563: Enter Global Custom XSL Code

4. Click **Save** to save the XSL code and close the screen. Alternately, click **Clear** to clear the XSL code, or **Cancel** to close the screen without saving the changes.

> Similarly, you can add global custom XSL code after mapping XSL, by selecting **Global Custom XSL After** option from the Actions menu (refer to Select Global Custom XSL Before Option screen).

5. Once you have entered the custom XSL code, it is saved in the Mapping XSL screen (see Figure 564).

Figure 564: Custom XSL Code in Mapping XSL

Select Root

You can change the root element when XML schemas are loaded. The root element always appears as a tag in the Output section on the *Debugger* screen. You can change this tag by selecting the desired root element.

Steps to select root element of a schema

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the *root element* of the schema whose root element you want to change and select the **Select Root** option.

3. The *Select Root Element* screen is displayed.

4. This screen displays a list of existing root elements for the selected schema in a dropdown list (see Figure 565).
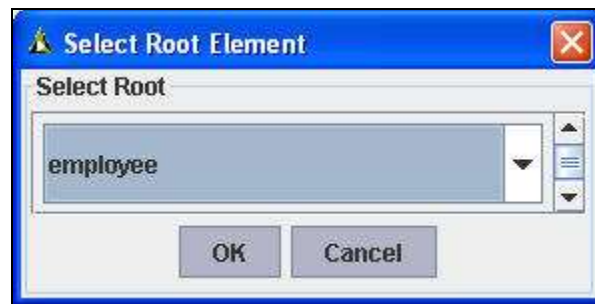
Figure 565: Select Root Element

> All elements that are declared as global in the XSD are listed in this dropdown list.

5. Select the *root element* that you want to change from the *Select Root* dropdown list and click **OK**. A screen is displayed confirming the change of the root element (see Figure 566).

Figure 566: Confirm Change of Root Element

6. Click **Yes** to change the root element. This changes the root element and displays the selected root element.

> The *Select Root* sub-option is displayed as active only for the root element.

Adding Namespace Prefix

You can add a namespace prefix to a target element. This prefix is displayed next to the target element in the target schema, and is automatically displayed in the Output section on the *Debugger* screen.

Steps to add a namespace prefix to a target element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the element of the target schema for which you want to add a namespace prefix and select the **Add Namespace Prefix** option.

The *Add Namespace Prefix* screen is displayed (see Figure 567).

Figure 567: Add Namespace Prefix

3. Enter the namespace prefix and click **OK**. This adds the prefix and displays it next to the selected target element in the target schema.

> Once you add a namespace prefix for a target element, you need to add a namespace for it. To do this, refer to Adding Namespace section.

Excluding Result Prefixes

In case you do want the namespace prefix to be automatically displayed in the Output section on the *Debugger* screen, Adeptia Suite enables you to exclude a namespace prefix from the target element.

Steps to exclude the Result prefixes from the Output section

1. Click the **Actions** menu.

2. Select the sub-menu **Exclude Result Prefixes**. The **Exclude Result Prefixes** screen is displayed (see Figure 568).
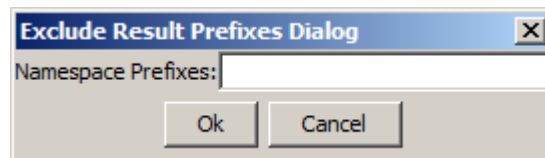
Figure 568: Exclude Result Prefixes Dialog

3. Enter the prefix that you want to exclude from the output section on the Debugger screen.

> To exclude more than one namespace prefixes, enter the namespace prefixes separated by a white space in the **Exclude Namespace Prefix** textbox and click **OK**. The excluded namespaces will then not be automatically displayed in the **Output** section on the *Debugger* screen

Populating extension type element

If complex type of element is an extension type i.e. other complex types are extending from this type, then you have the option to load the hierarchy from the list of complex types, which are extending from original element type.

Steps to select extension element

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Right-click the extension element of the schema whose element hierarchy you want to change and select the **Extension Element** option.

> The *Extension Element* sub-option is displayed as active only for the extension element.

3. The **Select Extension Element** screen is displayed (see Figure 569). This screen displays a list of extension element type.
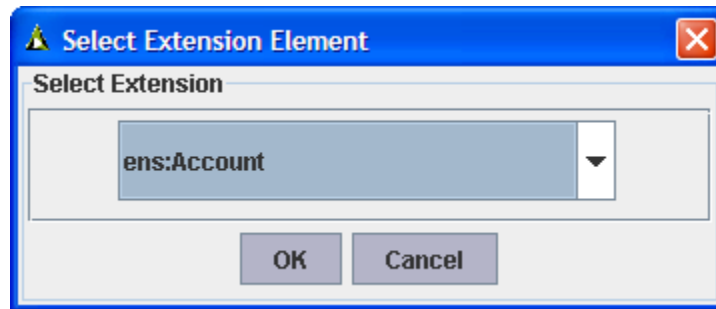
Figure 569: Select Extension Element

4. Select the required extension type that you want to load from the **Select Extension Element** dropdown list and click **OK**. A screen is displayed confirming the change of extension element (see Figure 570).
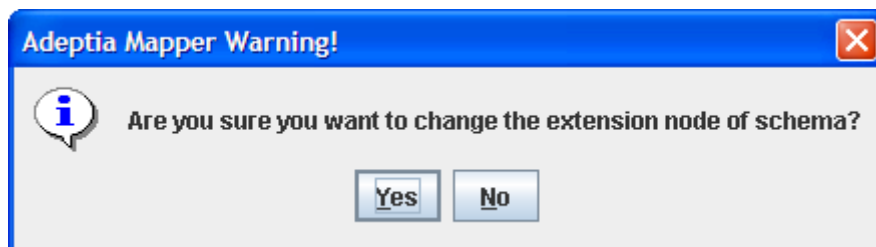
Figure 570: Confirm Change of Extension Element

5. Click **Yes** to change the extension element. The selected hierarchy will be loaded.

USING RECORD TO RECORD SERVICES

Record to Record Service takes inputs record by record and processes them according to the defined logic using java programming construct, and gives the output one record at a time. User can write Java logic that will be executed in this service. The Java logic has access to Record to Record script service, context of the process flow this service belongs to, input and output Stream handlers, which allow Java logic to access and manipulate input data to generate output and pass it to another service in the process flow.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Prerequisites

- *Schema* activity must be created before creating *Record to Record Service*.

Steps to create Record to Record activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Data Transformation** and then click **Record to Record**.

   The *Manage Record to Record* screen is displayed (see Figure 571).

Figure 571: Manage Record to Record Service

3. Click the **Create New** link. The **Create Record to Record** screen is displayed (see Figure 572).

Figure 572: Create Record to Record Service

4. Enter the name and description of the new Record to Record service in the **Name** and **Description** fields respectively.

5. Enter the sample Java script displayed in Figure 573 to perform the desired transformation.

Template Script:

```
Note: the complete script is executed for each record.
// Setting Process Flow variable (nextRecord) value
context.put("nextRecord","no");
// Setting one record into Process Flow Context
context.put("RecordData",record);
// Wait for Process Flow variable(nextRecord) value to be changed to 'yes'
while(true)
{
try
{
String recordExist = (String)context.get("nextRecord");
if(recordExist.equalsIgnoreCase("no"))
{ Thread.sleep(1000); }
else
{ break; }
}
catch (InterruptedException e)
```

```
{ e.printStackTrace(); }
}
```

Figure 573: Sample Java Script

6. Select input and output format as either XML or Native (non XML) from the **Input Format** and **Output Format** dropdown lists respectively.

7. Select the source schema activity from the **Schema Name** dropdown list.

> If any XML Schema is selected in the **Schema Name** dropdown list, then the **Input Format** must be selected as XML.
>
> To learn how to create Schema activity, refer to *Creating Schema Activity* section.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.

8. Click the **Save** button.

CREATING EXTENSIONS

This section describes:

- [Creating a custom plugin activity](#)
- [Creating a Native Call activity](#)

CREATING CUSTOM PLUGIN

A custom plugin is a scripted service that can process data in a customized manner using java-programming constructs and provides an extension point for adding any customized data processing logic. It takes the input as a stream and generates the output as a stream. You can write a Java logic that will be executed in this service. Java logic has access to the script service, context of the process flow this service belongs to, input and output stream handlers that allow Java logic to access and manipulate input data to generate the output and pass it to another service in process flow.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to create custom plugin activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Extensions** and then click **Custom Plugin**.

    The *Manage Custom Plugin* screen is displayed (see Figure 574).

Figure 574: Manage Custom Plugin

3. Click the **Create New** link. The *Create Custom Plugin* screen is displayed.

4. Enter the name and description of the new custom plugin in the textboxes **Name** and **Description** respectively.

5. Enter the Java code that you want to use to perform the desired transformation.

    The following figure displays the sample variables and the java script code (see Figure 575).

Figure 575: Sample JAVA Script

> ℹ While writing the java script for custom plugin, you do not need to hard code the values in the code. Now, you can define variables and their values in a tabular format and you can use those variables in the custom plugin script.

6. Click the **Save** button.

CREATING NATIVE CALL ACTIVITY

Native Call is used to run the .EXE, .BAT or .SH files asynchronously during the execution of a process flow.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to create Native Call activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Extensions** and then click **Native Call**.

The *Manage Native Call* screen is displayed (see Figure 576).

Figure 576: Manage Native Call

3. Click the **Create New** link. The **Create Native Call** screen is displayed.

4. Enter the name and description of the new Native Call activity in the textboxes **Name** and **Description** fields respectively.

5. Select the extension of the file i.e. .exe, .bat or .sh from the dropdown list **Default Extension**.

6. Enter the filename with full path in the textbox **File Name(Absolute Path)**.

7. To specify any arguments for selected batch or executable file enter the arguments in the **Argument(s) space separated** field (see Figure 577).
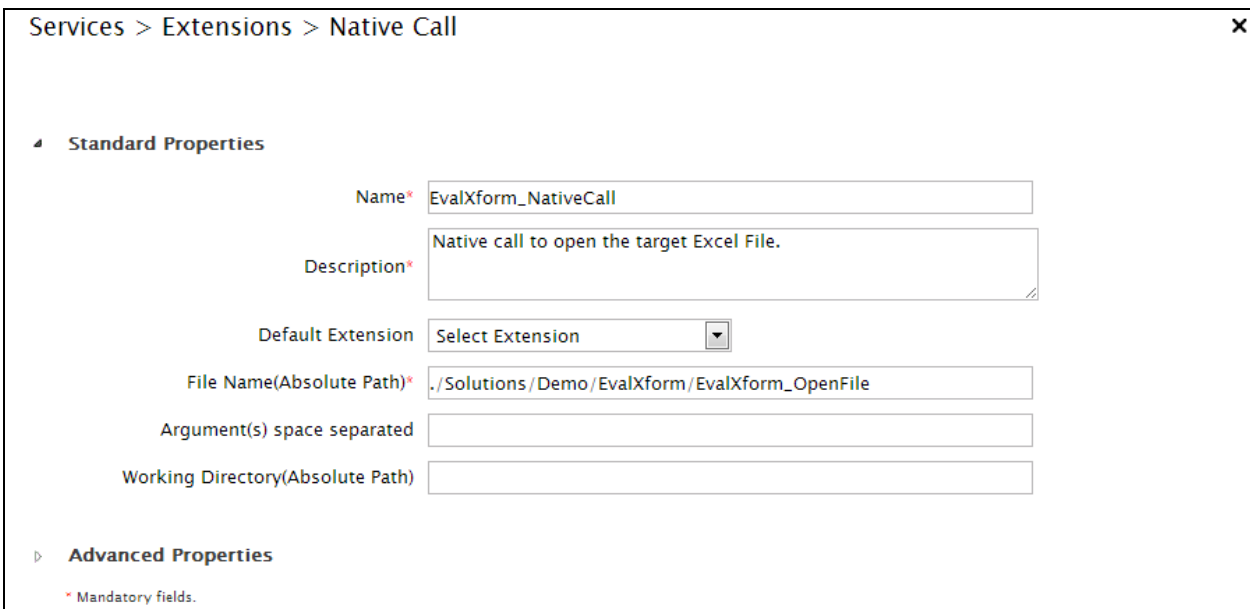
Figure 577: Create Native Call

8. Enter the path of directory, where you want the run the specified batch or executable file, in the **Working Directory (Absolute Path)** field.

> All files specified into batch or executable file must be placed on the server on which the Adeptia Server is running.

> If Working Directory is not specified, the home directory of Adeptia Server, (i.e. *../../AdeptiaServer/AdeptiaeServer-6.2*) becomes the working directory. All the files specified into batch or executable file will be looked into Adeptia Server home path.
>
> For example, there is batch file *Mybatch.bat* and it is placed on C drive. The contents of batch file are *Copy File1.txt File2.txt*. *File1.txt* is placed in C drive. Since the working directory is not

specified the batch file will look for *File1.txt* into *../../AdeptiaServer/AdeptiaServer-5.1* and it will cause error. So you can either specify the working directory (i.e. C:\) or specify the absolute path (e.g. *copy C:\File1.txt C:\File2.txt*) in the batch file.

9.   Click the **Save** button.

When using a native call in a process flow, the *waitForEnd* property is set to *False* by default. This implies that the native call and other activities in the process flow are executed simultaneously. If you want to wait till the native call is complete, before executing the next activity in the process flow, you need to set this property to *True*.

CREATING POLLING SERVICE ACTIVITY

Polling Services allow the process flow to 'wait' and 'listen' to a defined location, at which specific file, mail or data is to arrive or is to be modified before the execution of next activity. The Polling Services perform the 'listen' action at a frequency specified while creating the Polling activity.

There are four types of Polling Service:

- Database Polling Activity
- File Polling Activity
- FTP Polling Activity
- Mail Polling Activity

POLLING STATUS

When a polling service is used in a process flow, it creates a *PollingStatus* activity variable. This variable is assigned value based on the execution of the polling service in the process flow. The Polling Status activity variable can take the following values:

- Timeout
- Aborted
- Success

CREATING DATABASE POLLING ACTIVITY

The Database Polling Service activity is used to check any changes in the data stored in a database table.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Prerequisites

- *Database Info* activity must be created before creating *Database Polling Service* activity.

Steps to create a Database Polling activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** > **Polling** and then click **Database**.

The *Manage Database Polling Service* screen is displayed (see Figure 578).

Figure 578: Manage Database Polling Service

3. Click the **Create New** link. The *Create Database Polling Service* screen is displayed (see Figure 579).

Figure 579: Create Database Polling Service

4. Enter the name and description of the new Database Polling Service in the textboxes **Name** and **Description** fields respectively.

5. Select the Database Info Id activity from the dropdown list **Database Info Id**.

> To learn how to create Database Info activity, refer to the section *Creating Database Info* in *Administrator Guide*.

6. You can create the database event definition by entering an SQL Query or a database trigger command. By default, *SQL Query* option is selected. Enter the query in the *SQL Query* field. Select the operator for the query from the dropdown list **Operator**. Enter the value to be compared in the query in the **Value** field. The query should return only one record. If the query returns multiple records, then only the first record is accepted. If the query returns one record, then it will compare the value of the first field with the value specified in the **Value** field.

7. Alternately, enter the database trigger command in the **SQL Trigger** field.

> ℹ️ Following is the format of SQL trigger.
>
> ```
> <Trigger Text>
>   INSERT INTO dbpollingtable VALUES ('Query =<WHERE CLAUSE>');
>   END <trigger name> ;
> ```
>
> Edit the parts, which are within < >. You can define a 'Where' clause that indicates the row that is updated. When the command is parsed, it will return the updated row from the database source.
>
> Do not delete the Insert query.
>
> <trigger name> after the END tag should be used for Oracle only. In case of SQL server, <trigger name> is not needed.
>
> Following is the example of the trigger used for SQL Server :
>
> ```
> create trigger Trigger_test on emp for
> insert,update
> as
> declare @empname varchar(20)
> begin
> set @empname=(select empname from inserted);
> INSERT INTO dbpollingtable VALUES ('Query =WHERE empname='''
> +@empname+'''');
>
>  END;
> ```
>
> Following is the example of the trigger used for Oracle:
>
> ```
> CREATE OR REPLACE TRIGGER Trigger_test
> AFTER INSERT OR UPDATE ON Emp FOR EACH ROW BEGIN
> INSERT INTO dbpollingtable VALUES ('Query = where rowid= ' || :new.rowid );
> END Trigger_test;
> ```
>
> Here :
> *Trigger_test* is name of the trigger.
> *Emp* is the name of the user table on which insert or update operation has to be done.
> *dbpollingtable* is the name of the temporary table used. Do not change it.

8. Enter the name of Trigger in the **SQL Trigger Name** field.

9. Enter the time interval for Polling in the **Polling Frequency** field. Enter the digit in the **Frequency** field and select the unit of time i.e. seconds, minutes or hours etc. from the **Duration** dropdown list.

10. Enter the expiry time in the **Expiry Time** field. After expiry time process flow does not poll for data.

> Recommended minimum Polling Frequency is 30 seconds.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.

> When a database polling service is used in a process flow, it creates a *Polling Status activity* variable. For details, refer to Polling Status section.

11. Click the **Save** button.

CREATING FILE POLLING ACTIVITY

The Polling Service activity is used to check the arrival or modification of file(s) on the Local LAN location.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to create a File Polling Activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Polling** and then click **File**.

   The *Manage File Polling Service* screen is displayed (see Figure 580).

Figure 580: Manage File Polling Service

3. Click the Create New link. The **Create File Polling Service** screen is displayed (see Figure 581).

Figure 581: Create File Polling Service

4.   Enter the name and description of the new File Polling Service in the textboxes **Name** and **Description** respectively.

5.   Select the trigger type from the dropdown list **Trigger Type**. The effect on the selection is listed in the table below.

Table 1: Trigger Type Selection Values

Trigger Type Selection	Description
On FileCreated	To configure the File Polling service to check for the creation of a new file(s).
In case a file is being created and after that it is being modified, then you need to enable the *Check for File Modification* option. This option is only used with *On File Created* option.	
On FileExists	To configure the File Polling service to check for the existence of the file(s)
On FileModified	To configure the File Polling service to check for any modification in file(s)

6.   Enter the name of file that File Polling service needs to verify, in *File Include Criteria* field.

7. Enter the name of file that File Polling service does not need to verify, in **File Exclude Criteria** field. For example *.txt is entered in *File Include Criteria*, but two files *Gdata.txt* and *Gdata1.txt* are not required to be verified by File Polling service. Then *Gdata.txt* and *Gdata1.txt* file name need to be entered separated by comma in *File Exclude Criteria* field. You can use regular expressions listed in the table below.

Table 2: Expressions used in File Include Criteria and File Exclude Criteria

Expression	Description
.	For all files with some extension
*	For all files in a directory
a*.txt	For files starting with a and having extension txt (e.g. arch.txt)
a??????.txt	For files starting with a and have 6 more character followed by txt extension (e.g. archive.txt)
a[1-9]	For a1, a2 ,a3 …………..a9
b[aiu]t	For bat, bit or but
a.txt, a.doc	For two files named as a.txt and a.doc

8. Enter the path of file in **File Base Location**. Example c:/Gmdata.

> You can also use regular expression for folders, in *File Include Criteria* and *File Exclude Criteria* fields. For example, if you enter *h*/*.txt* in *File Include Criteria* field and *C:/Gmdata* in *File Base Location* field, it will search for all .txt file inside all directories which starts from h under C:\Gmdata.

9. When Adeptia Server is installed on Windows Operating System, File Polling uses windows service to connect to remote machine to access any file. It just connects once and uses the same connection with the same User ID and Password (which is stored in the cache) every time. If you want to enforce the validation of User ID and Password every time while accessing the file on a remote machine, select the **Use VFS** checkbox.

10. Enter username and password in the textboxes **User ID** and **Password** respectively. Then, re-enter the password in the textbox **Confirm Password**.

11. Enter the time interval, the file polling service will check for the arrival of any file or modification of existing file in the textbox **Polling Frequency**. Enter the digit in the *Frequency* field and select the unit of time i.e. seconds, minutes or hours etc. from the **Duration** dropdown list.

> Recommended minimum Polling Frequency is 30 seconds.

12. Enter the file stable time in the textbox **File Stable Time**. This is applicable only when user selects *On FileModified* in trigger type. Polling will wait for the above specified time to become a file stable.

13. Enter the expiry time in the textbox **Expiry Time**. After expiry time process flow does not poll for the file.

> To learn about Advanced Properties refer to <u>Changing Advanced Properties</u> section.

> When a file polling service is used in a process flow, it creates a *Polling Status activity* variable. For details, refer to <u>Polling Status</u> section.

14. Click the **Save** button.

CREATING FTP POLLING ACTIVITY

The FTP Polling Service activity is used to check the arrival or modification of a file(s) on a FTP location.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to create a FTP Polling Activity

1. On the Adeptia Suite homepage, go to **Configure > Services > Polling** and then click **FTP**.

   The *Manage FTP Polling* screen is displayed (see Figure 582).

Figure 582: Manage FTP Polling Service

2. Click the **Create New** link. The **Create FTP Polling Service** screen is displayed (see Figure 583).

Figure 583: Create FTP Polling Service

3. Enter the name and description of the new FTP Polling Service in the textboxes **Name** and **Description** respectively.

4. Enter the name and port number of the FTP Server in the textboxes **Host Name** and **Port** respectively.

5. Enter username and password required to access FTP Server in the textboxes **User ID** and **Password** fields respectively. Then, re-enter the password in the textbox **Confirm Password**.

6. Select the transfer type as either **Active** or **Passive** from the dropdown list **Transfer Type**. *Active* transfer is more secure since the client only initiates communication to the Server on one port whereas in case of *Passive* transfer the client initiates communication to the Server over two ports. Passive mode is useful when you are behind a firewall or a proxy.

7. Select the trigger type from the dropdown list **Trigger Type**. For selection of values, refer to Table 2.

8. Select the **SSH FTP (SFTP)** checkbox if the FTP Server specified in the **Host Name** field is an FTP Server over SSH.

9.   Check the **FTP Over TLS/SSL (FTPS)** checkbox, if the FTP Server, specified in the **Host Name** field is an FTP Server over TLS/SSL.

10. In case you have selected **FTP Over TLS/SSL (FTPS)** checkbox, then select the FTPS mode from the **FTPS Mode** dropdown list. It can be *Explicit* or *Implicit* depending on FTP Server that you are accessing.

26. Select the protection level supported by the FTP Server, from the dropdown list **Protection Level**. This drop-down list has the following three options:

- None
- Clear
- Private

By default, the option **None** is selected.

11. If you want to validate the certificate sent by the FTPS Server select the **Validate Server** check box.

12. Select keystore activity from the **Keystore Name** dropdown list. This option is applicable only when you have checked the **Validate Server** checkbox.

> When **Validate** option is unchecked, it always accepts the certificate sent by FTPS Server. When this option is checked, it validates the certificate sent by FTPS server against the certificate imported in Keystore.
>
> Keystore is repository of security certificates. To know how to create Keystore and import certificates, refer to *Creating Keystore* section of *Administrator Guide*.

13. Enter the name of file that FTP event needs to verify in the **File Include Criteria** field.

14. Enter the name of file that file event does not need to verify in the **File Exclude Criteria** field. For example **.txt* is entered in **File Include Criteria**, but two files *Gdata.txt* and *Gdata1.txt* are not required to be verified by FTP Polling Service. Then *Gdata.txt* and *Gdata1.txt* file name need to be entered separated by comma in **File Exclude Criteria** field. You can use regular expressions listed in Table 2.

15. Enter the path of file in *the* **File Base Location**. Example c:/Gmdata.

> You can also use regular expression for folders in **File Include Criteria** and **File Exclude Criteria** fields. For example, if you enter *h*/*.txt* in *File Include Criteria* field and *C:/Gmdata* in *File Base Location* field, it will search for all .txt file inside all directories which starts from h under C:\Gmdata.

16. Enter the time interval, the FTP Polling Service will check for the arrival of any file or modification of existing file in the **Polling Frequency** field. Enter digit in the **Frequency** field and select the unit of time i.e. seconds, minutes or hours etc. from the dropdown list **Duration**.
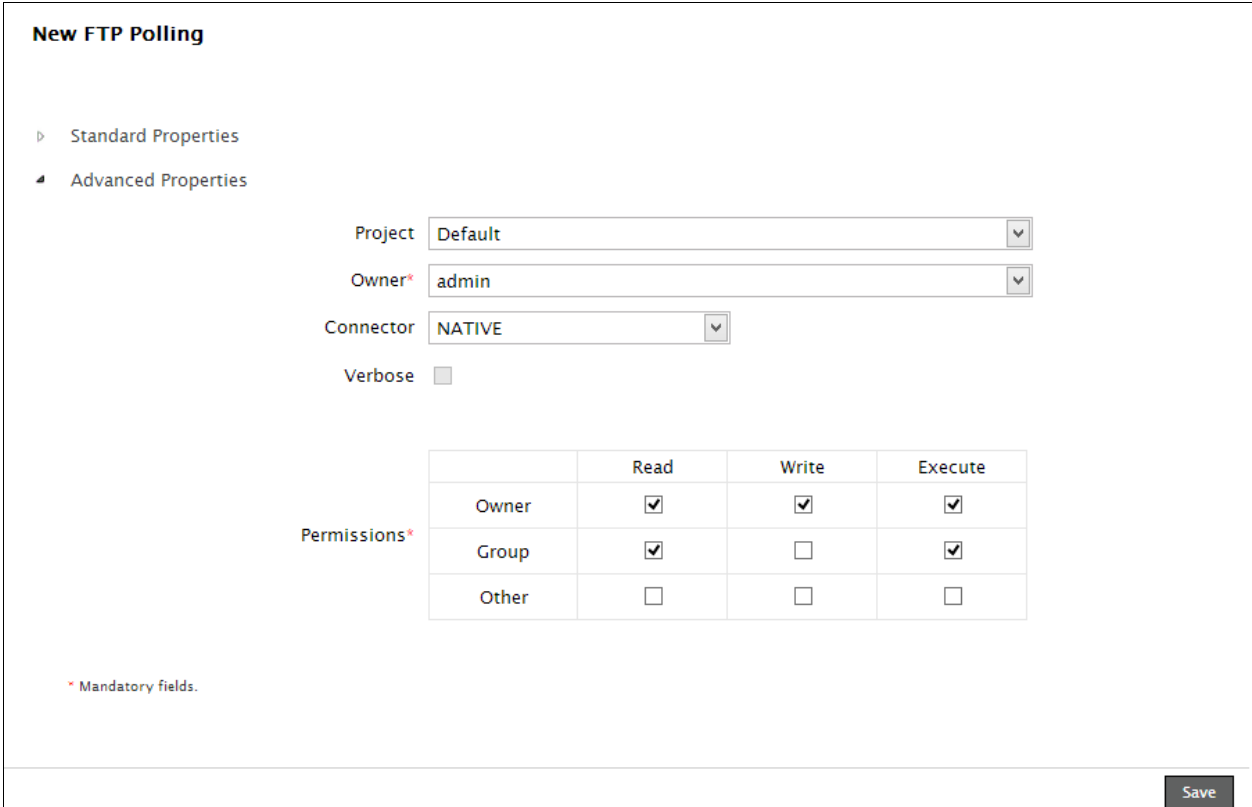
> Recommended minimum Polling Frequency is 30 seconds.

17. Enter the file stable time in the **File Stable Time** field. This is applicable only when user selects On *FileModified* in trigger type. Polling will wait for the above specified time to become a file stable.

18. Enter the expiry time in the **Expiry Time** field. After expiry time process flow does not poll for the file.

> ℹ️ To learn about Advanced Properties refer to [Changing Advanced Properties](#) section.

> ℹ️ When a FTP polling service is used in a process flow, it creates a *Polling Status activity* variable. For details, refer to [Polling Status](#) section.

19. Expand the **Advanced Properties** section to view the advanced properties (see Figure 584).

Figure 584: Advanced Properties (FTP Polling)

20. The **Connector** dropdown lists the APIs that you can use to connect to the FTP Server.

For any new activity, by default Secured Inet Factory option is selected in this dropdown list.

The options of the **Connector** drop-down list changes as per your selection of the protocols that you want to use to establish the FTP connection. Please see the below table for more information:

Protocol	Options
FTP	Native Secured Inet Factory

Protocol	Options
SFTP	J2SCH (VFS) Secured Inet Factory J2SSH
FTPS	J2SCH (VFS) Secured Inet Factory

21. If you want to create a log file of your FTP activity then check the **Verbose** checkbox.

> The **Verbose** checkbox is enabled only when you select the **Secure Inet Factory** option from the **Connector** drop-down list. When you enable the **Verbose** checkbox, the log file is created within `<Adeptia Suite Installation folder>\AdeptiaServer\ServerKernel\Logs\Ftplogs` folder. Whenever you execute this activity a separate log file is created with the name `<ActivityName_MM-dd-yyyy hh-mm-ss.S>`.
>
> Here:
>
> *ActivityName* is the name of the FTP Activity for which log file is created.

22. Click the **Save** button.

CREATING MAIL POLLING ACTIVITY

The Mail Polling activity is used to 'listen' for the arrival of any mails on the mail Server.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to create a Mail Polling activity

1. On the Adeptia Suite homepage menu, click the **Develop** tab.

2. Go to **Services > Polling** and then click **Mail**. The *Manage Mail Polling* screen is displayed (see Figure 585).

Figure 585: Manage Mail Polling Service

3. Click the **Create New** link. The **Create Mail Polling** screen is displayed (see Figure 586).

Figure 586: Create Mail Polling Service

4. Enter the name and description of the new Mail Polling activity in the textboxes **Name** and **Description** respectively.

5. Select the Internet standard protocol to be used for retrieving incoming mails, from the dropdown list **Protocol**. You can select either the *POP3*, *IMAP4* or the *MAPI* protocol. Based on the selected protocol, the default port number for that protocol is displayed in the *Port* field.

6. Enter the address of the incoming mail server in the textbox **Incoming Mail Server**.

> To access mails from Microsoft Exchange Server use *MAPI* in the *Protocol* dropdown list. To connect Adeptia Server with Microsoft Exchange Server, you need to buy a third party tool called *J-Integra for Exchange*. J-Integra for Exchange is a high performance middleware bridge that enables Java Exchange interoperability. If you want to retrieve mails from an Exchange Server using J-Integra, select *MAPI* in the *Protocol* dropdown list.
>
> If MAPI is selected in the **Protocol** dropdown list:
>
> * Enter name of the exchange server in *Incoming Mail Server* field
> * Enter the domain name in the *Domain* field
> * Enter the name of the CDO host machine in *CDO host machine* field. CDOConfig.exe is a tool that comes with the J-Integra for Exchange SDK and is used for configuring CDO. Host where CDO is configured is called CDO host machine.
>
> For detailed information about Jintegra for Exchange, refer to
> http://j-integra.intrinsyc.com/products/exchange/.

7. Select the **Secure** checkbox, if the specified incoming mail server is SSL enabled.

8. The default port number of the selected protocol is displayed in the *Port* field. If you want to change this port number, enter the new port number in the *Port* field.

9. Enter the user ID and password of mail server in the **User ID** and **Password** fields respectively. Then re-enter the password in the **Confirm Password** field.

10. Select any of the following filter criteria:

    - Sender E-mail
    - Mail Subject
    - Mail Content
    - File Attachment

    You may select more than one filter criteria.

11. Enter the sender's email address and subject of email in the textboxes **Sender Email** and **Mail Subject** respectively.

12. To define search based on mail content, enter the required content in the textbox **Mail Content**.

    > ℹ️ You can also use asterisk and Wild Cards in the **Mail Content** field.

13. Enter the name of the file attached with mail in the *textbox* **File Attachment**.

14. Enter the time interval for Polling in the textbox **Polling Frequency**. Enter the digit in the **Frequency** field and select the unit of time i.e. seconds, minutes or hours etc. from the dropdown list **Duration**.

    > ℹ️ Recommended minimum Polling Frequency is 30 seconds.

15. Enter the expiry time in the **Expiry Time** field. After expiry time process flow does not poll for the mail.

    > ℹ️ To learn about Advanced Properties refer to Changing Advanced Properties section.

    > ℹ️ When a mail polling service is used in a process flow, it creates a *Polling Status activity* variable. For details, refer to Polling Status section.

16. Click the **Save** button.

CREATING DATABASE CONNECTORS

Database Connector is used to make a connection between a particular database server (e.g. SQL, Oracle and DB2 etc.) and Adeptia Suite. There are several services of Adeptia Suite, which require database connector to connect to any database server. Examples of database connectors are *Database Schema, Database Source, Database Target* and *Database Events.* Database connectors consist of two parts: Database Driver and Database Info.

This chapter describes the following tasks:

- Creating Database Driver
- Creating Database Info
- Creating JMS Provider

CREATING DATABASE DRIVER

A database driver is used to specify the type of database and driver jar files that are required to connect to that database. Database jar files are drivers, which are used to connect to database Servers. There are specific jar files for specific database server. These jar files are not provided with the Adeptia Suite. These jar files are available with the database servers. Driver jar files can also be obtained from following locations:

Oracle Server

http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html.

SQL Server

http://www.microsoft.com/downloads/details.aspx?FamilyID=07287B11-0502-461A-B138-2AA54BFDC03A&displaylang=en

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a database driver

1. Click the **Develop** tab.

2. Go to **Services > Connector** and then click **Database Driver**.

The *Manage Database Driver* screen is displayed (see Figure 587).

Figure 587: Manage Database Driver

3.   Click the **Create New** link. The *Create Database Driver* screen is displayed.

4.   Enter the name and description of the new database driver in the textboxes **Name** and **Description** respectively.

5.   Click the **Browse** button to upload the driver jar files for the database. The *Upload Jar Files* screen is displayed (see Figure 588).
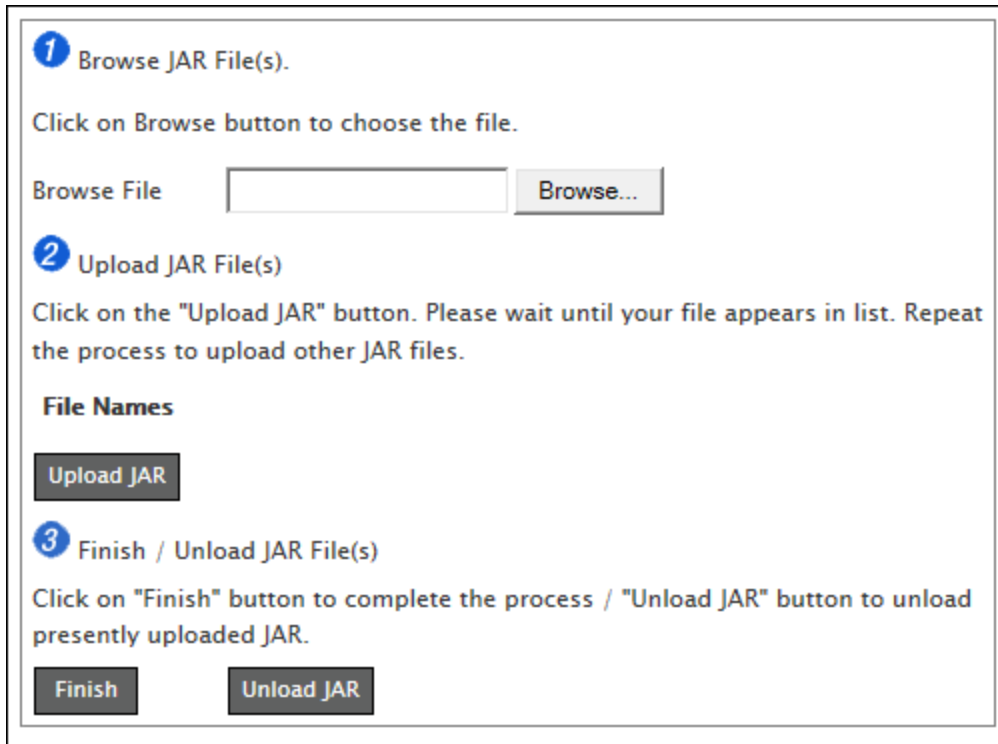
Figure 588: Browse Database Jar

6.   Click **Browse**… and select the required jar file. The path of the selected jar file is displayed in the textbox **Browse File**. A list of required Jar files for different databases is displayed in the table below.

Table 1: Jar Files for Database Servers
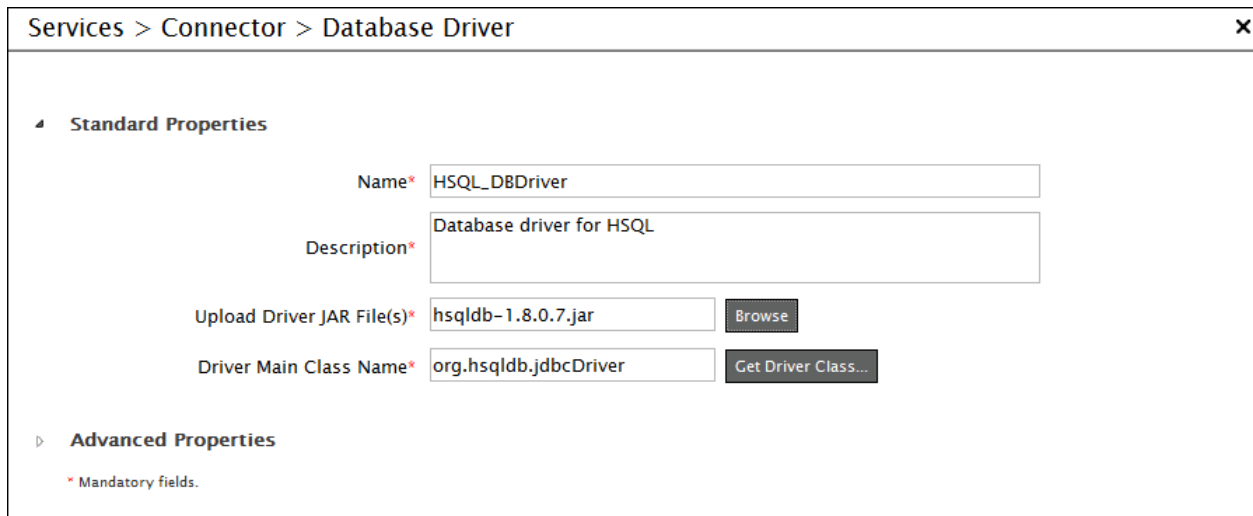
Database Servers	Driver Jar Files
Oracle	Classes12.jar For Oracle BLOB Data type: base.jar, oracle.jar and util.jar

Database Servers	Driver Jar Files
	These Jars can be downloaded from http://www.datadirect.com/download/index.ssp
IBM DB2 (Ver 7.1)	db2java.zip (7.1 version)
IBM DB2 (Ver 8.1)	db2jcc.jar
MS SQL	msbase.jar, mssqlServer.jar and msutil.jar
JTDS-SQL Server	Jtds.jar
HSQL DB	hsqldb-1.7.2.jar

7. Click the **Upload JAR** button. The file name is displayed under the heading **File Names**.

8. Repeat steps 6 and 7 to upload additional jar files.

> If required, you can also unload the JAR files. To unload jars files, click the **Unload JAR** button.

9. Click the **Finish** button to return to the *Manage Database Driver* screen. The uploaded jar file(s) is displayed in the **Upload Driver Jar files** field (see Figure 589).

Figure 589: Uploaded Driver Jar Files

10. Enter the Driver Main Class Name of the database in the **Driver Main Class Name** field. Driver Main Class Name is a fully qualified java class name for the main database driver class. The driver class name typically starts with a com., net. or org. followed by the company domain.

For example, the JDBC driver class for mysql.com is called *com.mysql.jdbc.Driver*. Click **Get Driver Class…** button to select the Database Driver Main Class Definition from the **Select Class** dropdown list (see Figure 590).

Figure 590: Select Database Driver Main Class Name

11. Click the **Submit** button. A list of Driver Main Class Name of different databases is displayed in the table below.

Table 2: Driver Main Class Names for Database Servers

Database Servers	Driver Main Class Definition
Oracle	oracle.jdbc.driver.OracleDriver For Oracle BLOB Data type: com.ddtek.jdbc.oracle.OracleDriver
IBM DB2 (Ver 7.1)	COM.ibm.db2.jdbc.net.DB2Driver
IBM DB2 (Ver 8.1)	com.ibm.db2.jcc.DB2Driver
MS SQL	com.microsoft.jdbc.sqlServer.SQLServerDriver
JTDS-SQL Server	net.sourceforge.jtds.jdbc.Driver
HSQLDB	org.hsqldb.jdbcDriver
MS Access	sun.jdbc.odbc.JdbcOdbcDriver
MS Excel	sun.jdbc.odbc.JdbcOdbcDriver

12. Click the **Save** button.

CREATING DATABASE INFO

You can use Database Info activity to specify the Server URL (JDBC URL), Username and Password to access the database. Server URL points to a specific database on a specified database Server. There is no standard for Server URL. Every JDBC driver uses a slightly different syntax. For example, a Server URL for a MySQL database using the com.mysql.jdbc driver might look like this: *jdbc:mysql://localhost/databaseName*. Database Info uses database driver to connect to the specified Database Server.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisites

- You must create Database Driver activity before creating Database Info Activity.

Steps to create Database Info

1. Click the **Develop** tab.

2. Go to **Services > Connector** and then click **Database Info**. This action will display you the *Database Info Manage* screen (see Figure 591).

Figure 591: Manage Database Info

3. Click the **Create New** link. This action will display you the *Create Database Info* screen.

4. Enter the name and description of the Database Info in the textboxes **Name** and **Description** respectively.

5. Select an existing JDBC database driver activity from the **Select JDBC Driver** drop-down list (see Figure 592).

New Database Info

◢ Standard Properties

Name*	ConnectToSalesDatabase
Description*	Connection information to sales database
Select JDBC Driver*	SQLServer_DBDriver ▾ Create New
Server URL*	jdbc:jtds:sqlserver://SERVERNAME:1443/DATABASENAME <u>Help</u>
User*	USERNAME
Password	••••••••
Confirm Password	••••••••
Select Schema Name	SchemaName Browse Schema
Enable Connection Pooling	☑
Maximum Connections	10
Minimum Connections	3
Maximum Idle Time (seconds)	10
Maximum Wait Time When Exhausted (milliseconds)	1000
	Test Database Connection

▷ Advanced Properties

* Mandatory fields.

Save

Figure 592: Create Database Info

6. To use a new JDBC database driver activity, click the **Create New** button. This action displays you the *Create Database Driver* screen.

> **ⓘ** To learn how to create a database driver activity, please refer to the <u>Creating Database Driver</u> section.

7. Enter the required parameters and click the **Save** button to save the Database Driver activity and return to the *Create Database Info* screen.

8. Click the **Help** link next to the **Server URL** field to get help in defining the Server URL. This action displays you the *Database URL Definition* screen (see Figure 593).
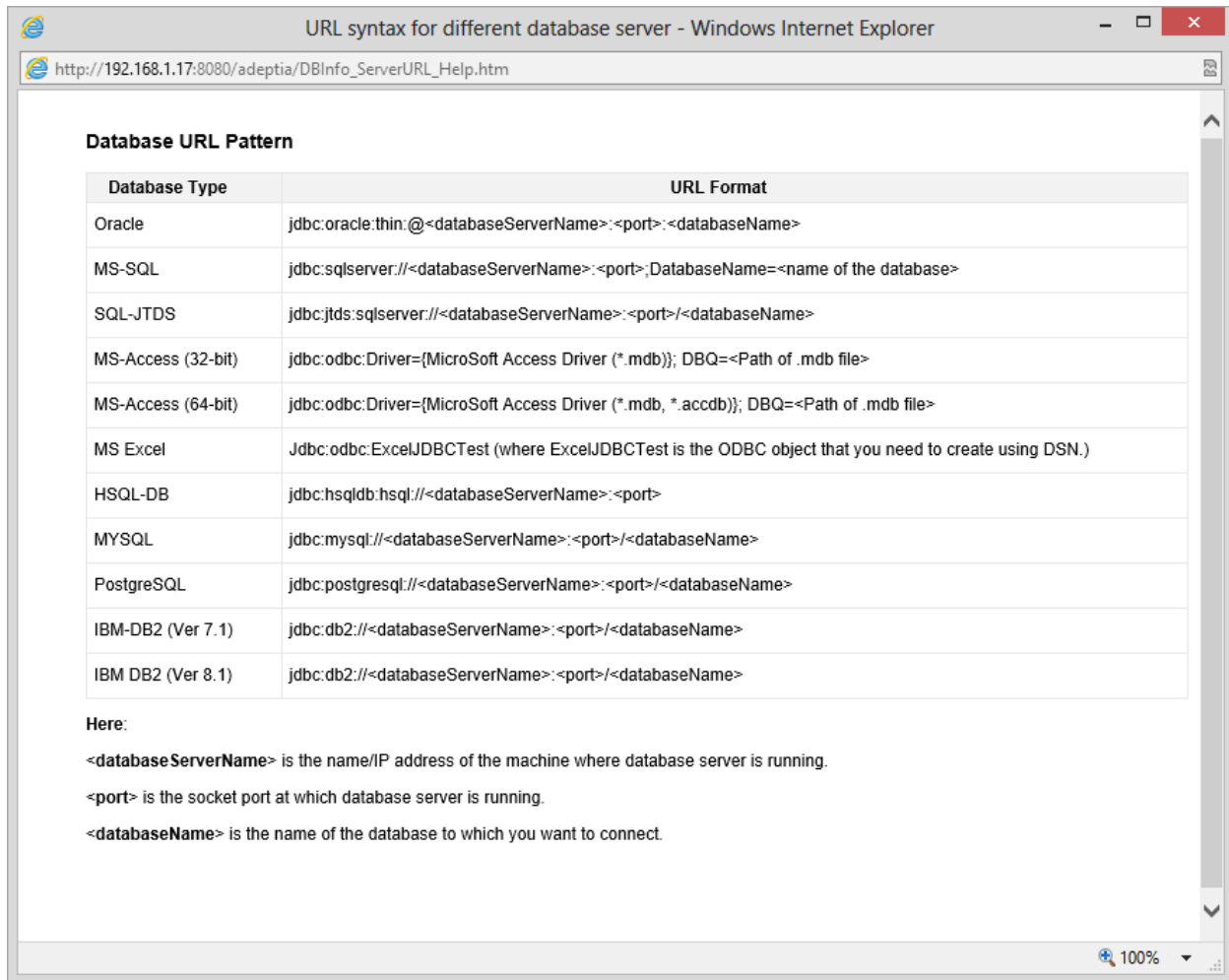
Figure 593: Database URL Definition Screen

9.   Enter the username of the database server in the **User** textbox.

10.   Enter the password for username of the database in the **Password** and **Confirm Password** textboxes respectively, if required.

11.   Click the **Test Database Connection** button to verify the connection between the Adeptia Suite and the database.

12.   Enter the name of the schema in the **Select Schema Name** field or click on the **Browse Schema** button to browse the schema on the database whose connection you have just created.

13.   Check on the **Enable Connection Pooling** checkbox if you want to enable database connection pooling.

14.   Enter the maximum number of connections in the **Maximum Connections** field that you want to keep in your connection pool at any time. By default, the value in it is 10.

> If you enter 0 in the **Maximum Connections** field then the activity will keep an unlimited number of connections in the connection pool.

15. Enter the minimum number of connections in the **Minimum Connections** field that you want to keep in your connection pool at any time. By default, the value in it is 3.

16. Enter the time in the **Maximum Idle Time (seconds)** field. This field allows you to keep an ideal connection in the connection pool as per the time specified. By default, the value in it is 10.

17. Enter the time, in milliseconds, in the **Maximum Wait Time When Exhausted (milliseconds)** field that you want the client to wait for a connection to be checked-in or acquired when the pool is exhausted (see Figure 564).

> **i** If you enter 0 in the **Maximum Wait Time When Exhausted (milliseconds)** field then the client will wait indefinitely.

Figure 594: Create Database Info

18. Click the **Save** button.

> - If you edit any Database Info activity while it is being used at run-time then, it would re-initialize the connection pool.
> - Apart from the four connection pooling settings that are visible on the **Create New Database Info** screen, you can change a lot of other settings of database connection pooling in the **c3p0.properties** file which you can find at *<Adeptia Suite Installation folder>***\AdeptiaServer\ServerKernel\etc**.
> - You can also configure the **c3p0.properties** file for a particular Database Info activity. For this you can make a copy of **c3p0.properties** file and append the activity ID of the database info activity. For example, c3p0_<activityID>.properties.
>
>   Here **<activityID>** is the 30 digit ID of the Database Info activity.
>
>   When you use this file, then at the time of execution the connection pool properties defined in this file are used instead of the one defined in **c3p0.properties** file.

CREATING JMS PROVIDER

JMS Provider is used to connect to JMS Server. While creating JMS Provider, you need to specify the Provider Jar files, which are used to connect to JMS Server. There are several services of Adeptia Suite, which require JMS Provider to connect to JMS Server.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

This section describes how to create a JMS Provider activity using the following details:

JMS Server Type	Apache Active MQ
Transfer Type	Secure
Provider JAR Files	Activemq-all-5.7.0.jar
JNDI Factory	org.apache.activemq.jndi.ActiveMQInitialContextFactory
URL	tcp://localhost:61616
User Name	MyUserName
Password	Mypassword
Queue Connection Factory	QueueConnectionFactory
Topic Connection Factory	TopicConnectionFactory

Steps to create JMS Provider

1. On the Adeptia Suite Home page, click the **Develop** tab.

2. Go to **Services > Connector** and then click **JMS Provider**.

   The *Manage JMS Provider* screen is displayed (see Figure 595).

Figure 595: Manage JMS Provider

3.   Click the **Create New** link. The *Create JMS Provider* screen is displayed.

4.   Enter the name and description for the new JMS Provider in the textboxes **Name** and **Description** fields respectively.

5.   Select the server type from the drop-down list **JMS Server Type** (see Figure 555)
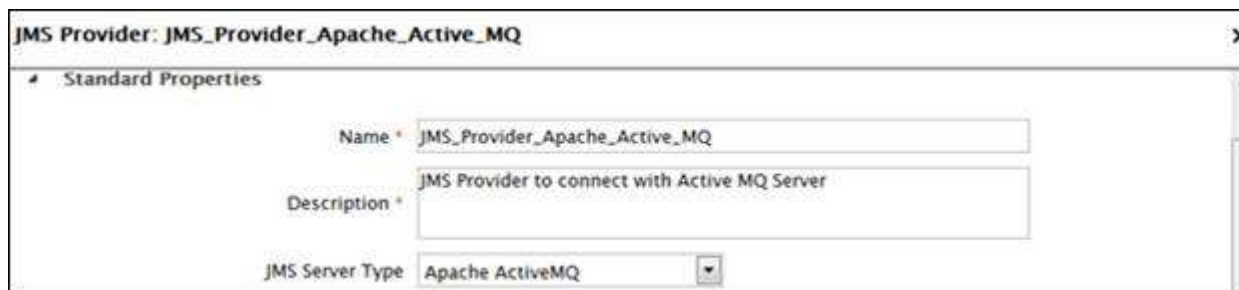
Figure 555: Create JMS Provider

> ℹ   To know more on the JMS Server types supported by Adeptia Suite and their corresponding JAR files, JNDI Factory and URLs, refer Table 4.

6.   Click **Upload Jars** button to upload the driver jar files for the JMS Server. The **Upload Jar Files** screen is displayed (see Figure 596).

Figure 596: Upload JAR Files

> JMS Jar files are drivers, which are used to connect JMS Servers. There are specific jar files for different JMS Servers. These jar files are not provided with the Adeptia Suite. Users should use the jar files that are available with the JMS Servers.

7. Click the **Browse** button and select the required jar files. The path of the selected jar file is displayed in the **Browse File** field.

8. Click the **Upload JAR** button. The file name is displayed in under the heading **File Names** list.

9. Repeat steps 6 - 8 to upload additional jar files.

10. Click the **Finish** button to return to the *Create JMS Provider* screen. The uploaded jar file(s) is displayed in the textbox **Provider Jar Files**.

> If required, you can also unload the JAR files. To unload jars files, click the **Unload JAR** button.

Figure 597: Create JMS Provider

11. Enter the JNDI Factory class name as specified by the JMS Provider in the textbox **JNDI Factory**. For Example, in case of Apache ActiveMQ, the value is *org.apache.activemq.jndi.ActiveMQInitialContextFactory*.

12. Enter the URL of the JMS Server in the **URL** field. For example, for Apache ActiveMQrunning on the same server, use *tcp://localhost:61616*.

13. Enter the username and password required to connect to JMS Server in the textboxes **UserName** and **Password** respectively.

14. Re-enter the password in the textbox **Confirm Password**.

15. Enter the JMS Provider Queue connection Factory in the **Queue Connection Factory** field. For example, in case of Apache ActiveMQ, Queue Connection Factory is QueueConnectionFactory.

16. Enter the JMS Provider Topic Connection Factory in the *Topic Connection Factory* field. For example, in case of OpenJMS, Topic Connection Factory is TopicConnectionFactory.

17. In case the JMS Server, which you are trying to connect, requires additional connection parameters, the enter those connection parameters and their values in the *Additional Connection Parameters* table (see Figure 558). For example in the below screen shots, name of the topic and queue is defined.

Figure 558: Create JMS Provider

ℹ️ The above example is only applicable in case of Apache MQ. If we use the Apache Active MQ as JMS Server then we can define the Topic and Queue name (which will be used in the Source/Target/Event) in the Additional Connection parameter table.

18. Click the **Save** button.

The following table lists the types of JMS Server supported by Adeptia Suite and their corresponding JAR Files, JNDI Factory, and URL (see Table 4):

Table 4: JMS Server Types and corresponding JAR Files, JNDI Factory Names and URLs

Server Type	JAR Files	JNDI Factory	URL
Apache Active MQ	activemq-all-5.7.0.jar	org.apache.activemq.jndi.ActiveMQInitial ContextFactory	tcp://localhost:61616
OpenJMS	openjms-0.7.7-beta-1.jar,	org.exolab.jms.jndi.InitialContextFactory	tcp://localhost:3035
	penjms-common-0.7.7-beta-1.jar,		
	openjms-net-0.7.7-beta-1.jar,		
	openjms-tools-0.7.7-beta-1.jar,		
	jndi-.2.1.jar,		
	concurrent-1.3.4.jar,		
	spice-jndikit-1.2.jar, derby-10.1.1.0.jar		
OracleAQ	aqapi.jar,ojdbc6.jar	oracle.jms.AQjmsInitialContextFactory	jdbc:oracle:thin:@{hostname}:{port}:{sid}
Oracle Weblogic	wlfullclient.jar	weblogic.jndi.WLInitialContextFactory	t3://localhost:7001
IBM WebSphere	com.ibm.mq.commonservices.jar,	com.ibm.mq.jms.Nojndi	
	com.ibm.mq.defaultconfig.jar, com.ibm.mq.headers.jar, com.ibm.mq.jar,		
	com.ibm.mq.jmqi.jar, com.ibm.mq.jms.Nojndi.jar, com.ibm.mqjms.jar,		
	connector.jar,		
	dhbcore.jar		

Version of JAR files may vary depending on version of the JMS Servers you are using.

USING MLLP

The Minimal Lower Layer Protocol (MLLP) is the most common mechanism for exchanging the HL7 data. MLLP uses the TCP/IP protocol to transfer the data in continuous stream of bytes. MLLP delimiters is used to recognize the start and the end of message.

Adeptia Suite support the transfer of data using MLLP. You can configure Adeptia Suite as MLLP Server or MLLP client.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Configuring MLLP Server

MLLP Server is used to receive the data. When an MLLP activity is configured in server mode, it opens the specified port and waits from the specified client to send the data.

Steps to configure MLLP Server

1. On the Adeptia Suite home page, click the **Develop** tab.

2. Go to **Services > Connector** and then click **MLLP**.

   The *Manage MLLP* screen is displayed (see Figure 598).

Figure 598: Manage MLLP Activity

3. Click the **Create New** link. The **Create MLLP** screen is displayed (see Figure 599).

Figure 599: Create MLLP Activity

4. Enter the name and description for the new MLLP activity in the textboxes **Name** and **Description** respectively.

5. Expand the *TCP Connection* properties. TCP connection properties are displayed.

6. Enter the IP address of the host in the textbox **Host Name**. This value is the name of the host from where the MLLP server is supposed to receive the data.

7. Enter the port at which the MLLP Server will allow the MLLP client to be connected in the textbox **Port field**.

8. Select *Server* from the dropdown list **Mode Type**.

9. Enter the maximum number of retries which the adapter attempts to connect to a specific TCP/IP connection before giving up in the textbox **Connection Retry Count**.

10. Enter the duration between the retries in the textbox **Interval between retry**.

11. Expand the **MLLP Properties**. The MLLP properties are displayed.

12. Enter start, end and last text character in the textboxes **Start Text Character***,* **End Text Character** and **Last Text Character** respectively.

13. Enter the data time out duration in the textbox **Data Time Out**.

14. Enter the data polling frequency in the textbox **Data Polling Frequency**. This is the time interval between successive polls for data.

15. Enter the acknowledgment timeout duration in the **Ack Time Out** field.

16. Enter acknowledgment polling frequency in the textbox **Ack Polling Frequency**. This is the time interval between successive polls for acknowledgment.

17. Enter location where you want to store the received data, in the textbox **File Base Location**. The received data is stored in the file named as Message_<yyyy-MM-dd-hh-mm-ss-SSS>. This file doesn't have any extension.

18. If you want to trigger a process flow, when any data is received, you can select the process flow, from the dropdown list **Process Flow Name**.

19. Click the **Save** button.

Configuring MLLP Client

MLLP Client is used to send the data to the specified MLLP server. While creating the MLLP Client, you need to define the data location. As soon as any data is stored, it starts sending the data to the specified MLLP Server.

Steps to configure MLLP Client

1. On the Adeptia Suite home page, click the **Develop** tab.

2. Go to **Services > Connector** and then click **MLLP**.

   The *Manage MLLP* screen is displayed (see Figure 600).

Figure 600: Manage MLLP Activity

3. Click the **Create New** link. The *Create MLLP* screen is displayed (see Figure 601).

Figure 601: Create MLLP Activity

4. Enter the name and description for the new MLLP activity in the textboxes **Name** and **Description** respectively.

5. Expand **TCP Connection** properties. The TCP connection properties are displayed.

6. Enter the IP address of the host to which the MLLP Client will send the data in the textbox **Host Name**.

7. In the textbox **Port** field, enter the port at which the MLLP client will connect the MLLP Server.

8. Select **Client** from the dropdown list **Mode Type**.

9. Enter the maximum number of retries, the adapter attempts to connect to a specific TCP/IP connection before giving up in the **Connection Retry Count.**

10. Enter the duration between the retries in the textbox **Interval between retry**.

11. Expand **MLLP Properties**. The MLLP properties are displayed.

12. Enter start, end and last text character in the textboxes **Start Text Character**, **End Text Character** and **Last Text Character** respectively.

13. Enter the data time out duration in the textbox **Data Time Out**.

14. Enter the data polling frequency in the textbox **Data Polling Frequency**. This is the time interval between successive polls for data.

15. Enter the acknowledgment timeout duration in the textbox **Ack Time Out**.

16. Enter the acknowledgment polling frequency in the textbox **Ack Polling Frequency**. This is the time interval between successive polls for acknowledgment.

17. Enter the location where from where data is picked and sent to the MLLP server in the textbox **File Base Location**. The data which you want to send to the MLLP server should be kept in this location.

18. By default file from only the folder, which is specified in the *File Base Location* is sent to the MLLP Server. In case you want to send the file from it sub folder also, you need to unselect the *Ignore Sub-Folders* option.

19. Click the **Save** button.

Activating MLLP Activity

Once you create the MLLP server or client, you need to activate it in order to receive or send the data.

Steps to activate MLLP Activity

1. Click the **Develop** tab.

2. Go to **Services > Connector** and then click **MLLP**. The *Manage MLLP* screen is displayed (see Figure 602).
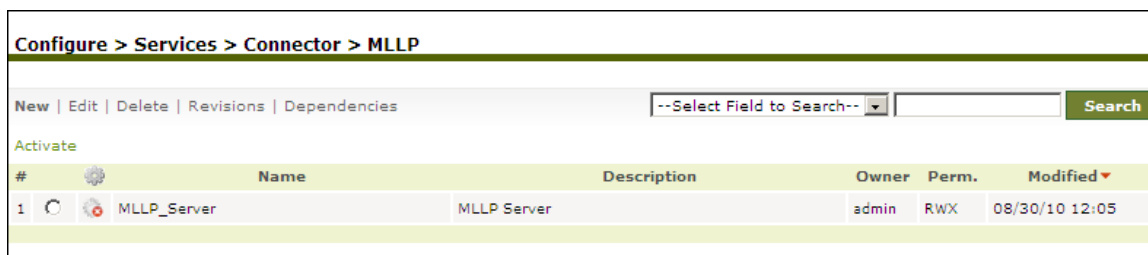
Figure 602: Manage MLLP Activity

3. Select the MLLP activity that you want to activate and click the *Activate* link. The selected MLLP activity is activated and a confirmation is screen is displayed. (see Figure 603).

MLLPConfiguration activity "MLLP_Server(19216800100512831501290460002)" activated successfully.
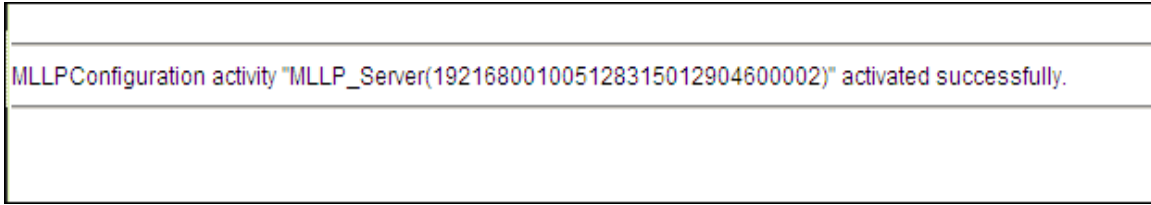
Figure 603: Manage MLLP Activity

CREATING MISCELLANEOUS ACTIVITIES

This section allows you to create the following activities:

- Context Download
- Context Upload
- Stored Procedure
- Mail Notification
- File Reference

CREATING CONTEXT DOWNLOAD ACTIVITY

Context Download activity is used to generate XML from a context variable. This is required when the context variable's information is to be stored in some target. This information can be passed as stream to other activities. For example, if you want to store variables and their values present in the context as per schema defined to any target activity like database target, File Target, then context download activity can be used. It will generate XML of context variables and their values, which can be further used.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to Create Context Download activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Miscellaneous** and then click the **Context Download**.

The *Manage Context Download* screen is displayed (see Figure 604)

Figure 604: Manage Context Download

3.   Click the **Create New** link. The **Create Context Download** screen is displayed.

4.   Enter the name and description for Context Download in the textboxes **Name** and **Description** fields respectively.

5.   Select the schema activity from the dropdown list **Schema Name** (see Figure 605).
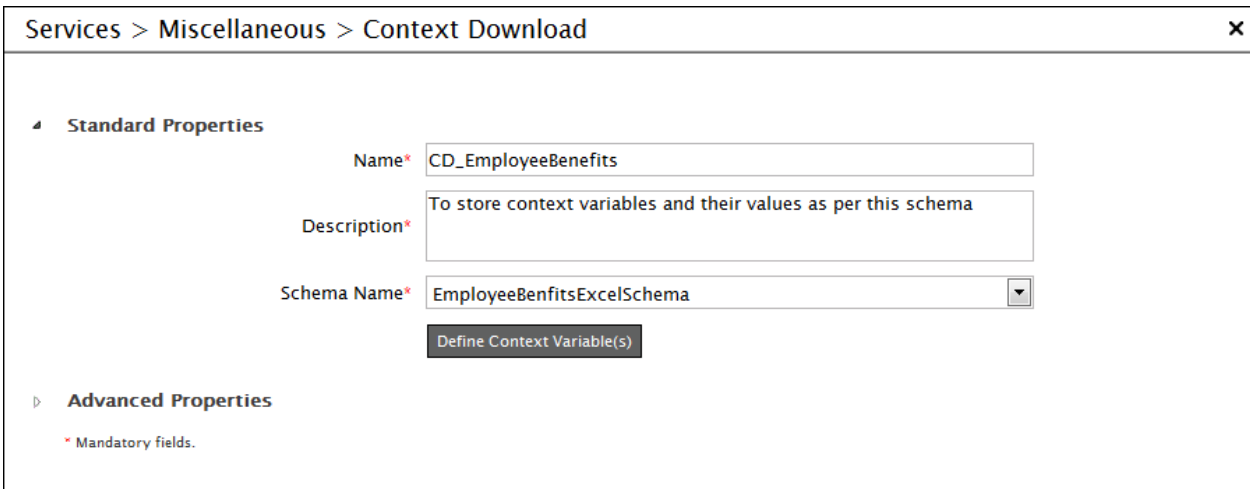
Figure 605: Create Context Download

6.   To define the context variable, click the **Define context variable(s)** button. The *Map Context Variable* screen is displayed (see Figure 606).
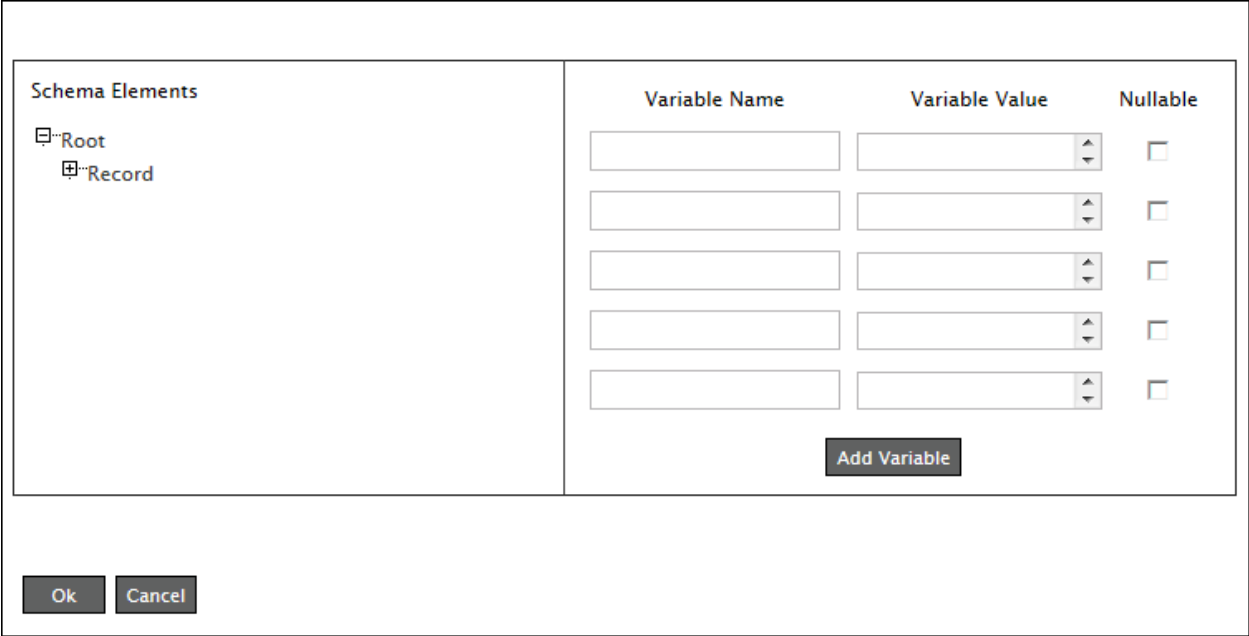
Figure 606: Map Context Variable

7. Expand the selected schema by clicking [+]. All fields of selected schemas are displayed (see Figure 607).
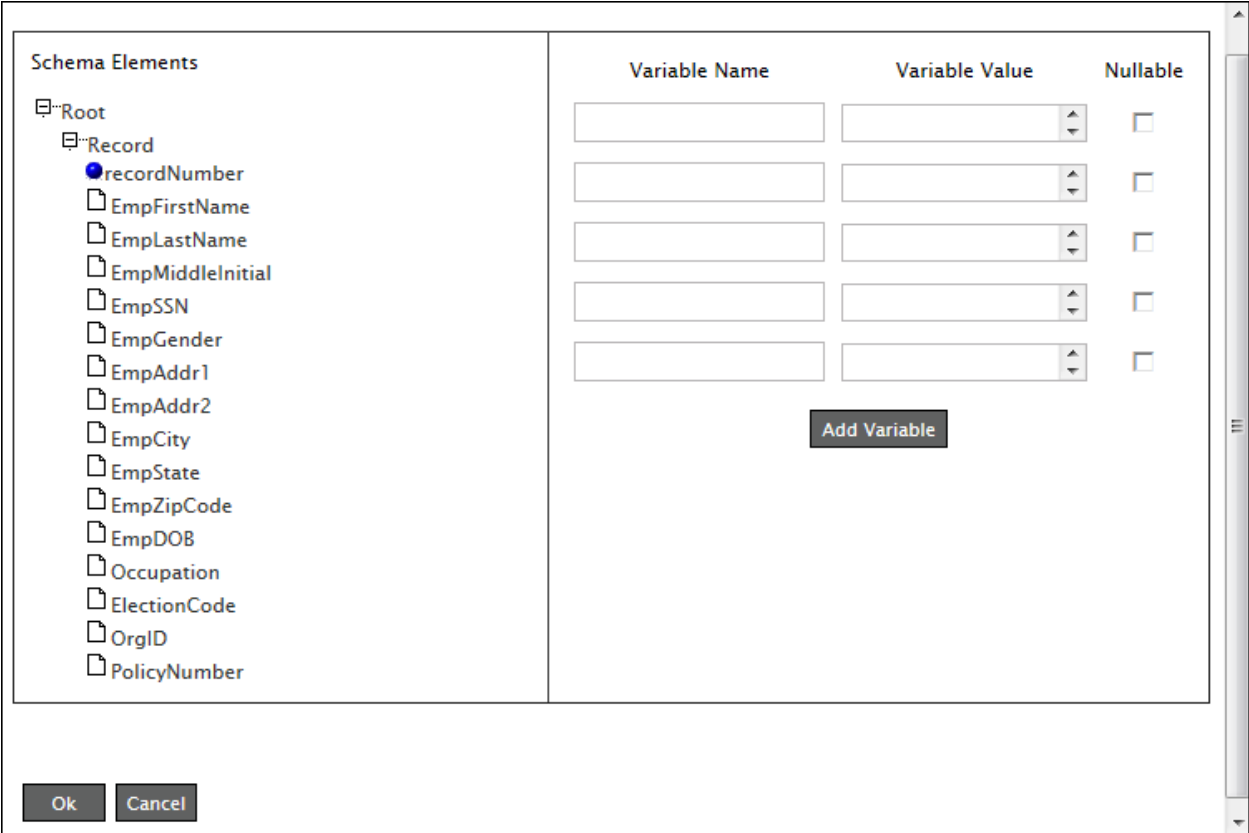
Figure 607: Expand Schema

8. Enter a name for the context variable in the textbox **Variable Name** (see Figure 608).
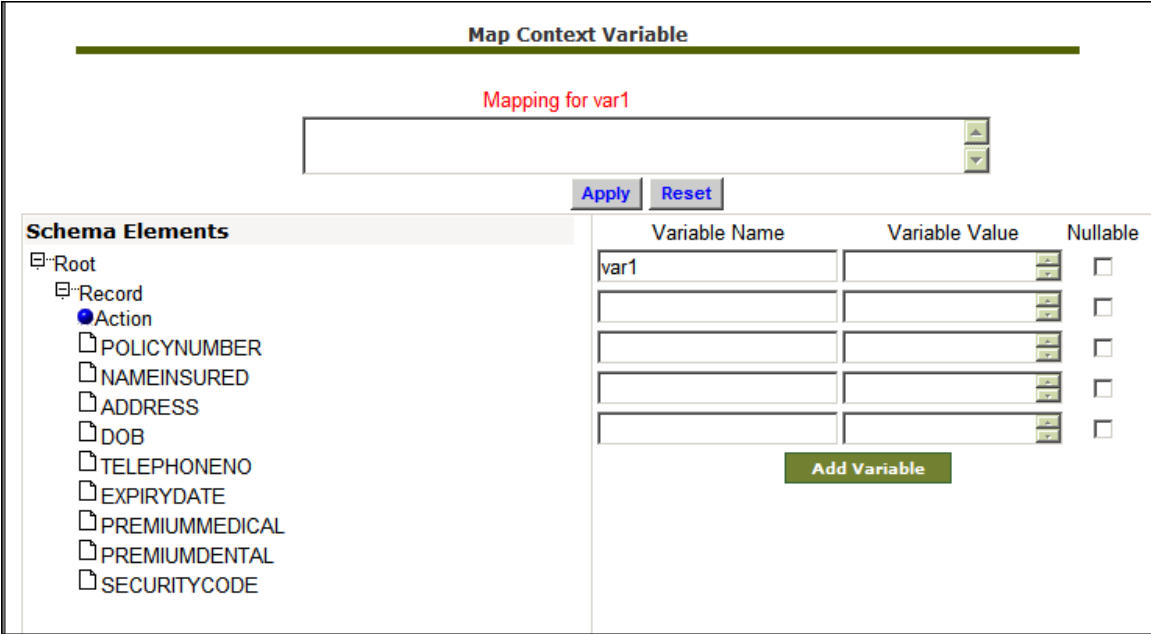
Figure 608: Enter Variable Name

9.   Select the schema element, which you want to map with the above defined variable. The XPath of the selected element is displayed in the textbox **Mapping** (see Figure 609).
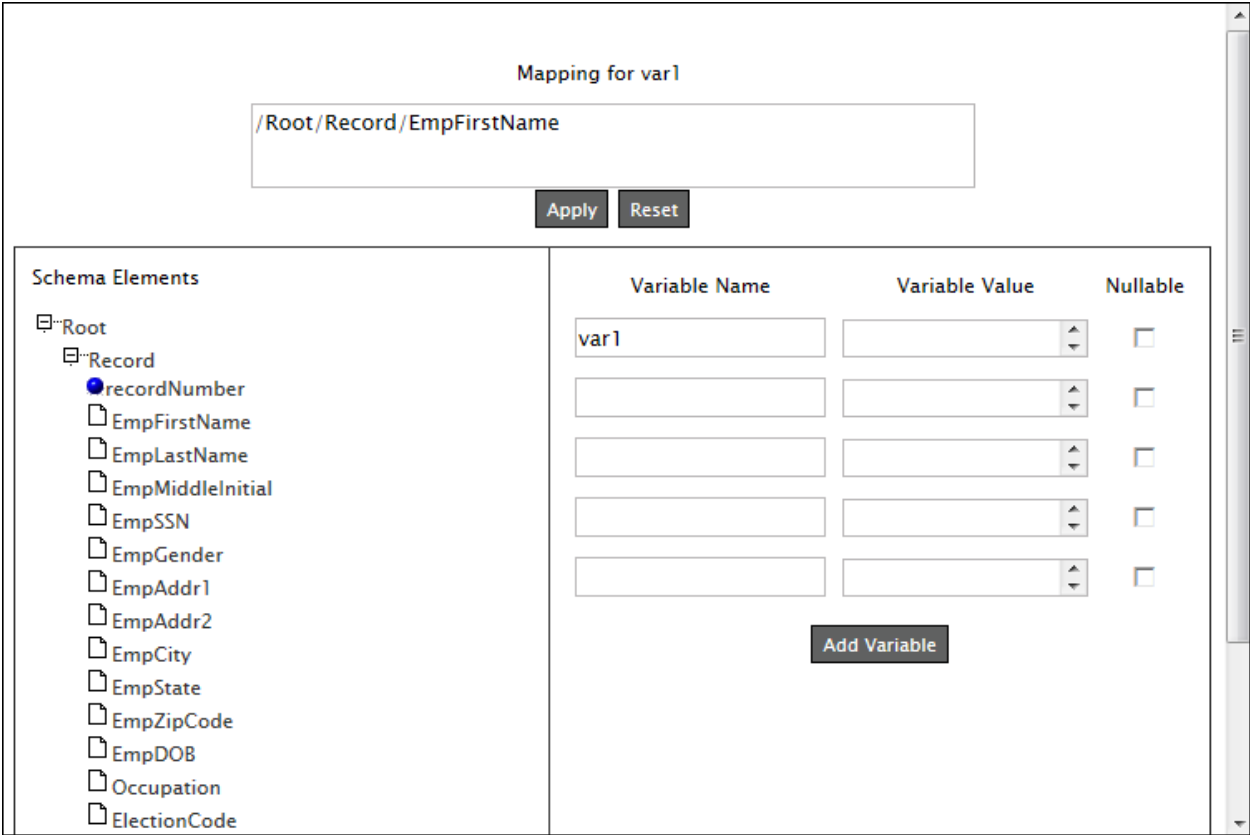
Figure 609: Map Schema Element with Variable

10. Click the **Apply** button. Value of the selected schema element is displayed in the **Variable Value** field (see Figure 610).

Figure 610: Apply Map

11. Repeat steps from 8 to10 to map the context variable with other elements.

12. Select the **Nullable** checkbox in case you want this variable to allow blank value.

13. Click **OK** button to return to the **Create Context Download** screen.

> To learn about Advanced Properties refer to Changing Advanced Properties section.

14. Click the **Save** button.

CREATING CONTEXT UPLOAD ACTIVITY

Context Upload is used to map any field of a schema to the Process Flow Context Variable. Once the variable is set in process flow context, it can be used by any activity in the Process Flow.

Context Upload variables can be created for all types of schemas. In case of XML Schema, only those XML schemas, which are created by uploading XSD file, or DTD file (with Convert to XSD option enabled) can be used to create Context Upload variables.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to Create Context Upload activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Miscellaneous** and then click the **Context Upload**.

   The *Manage Context Upload* screen is displayed (see Figure 611).

Figure 611: Manage Context Upload

3. Click the Create New link. The *Create Context Upload* screen is displayed.

4. Enter the name and description for Context Upload in the textboxes **Name** and **Description** respectively.

5. Select the schema activity from the dropdown list **Schema Name** (see Figure 612).
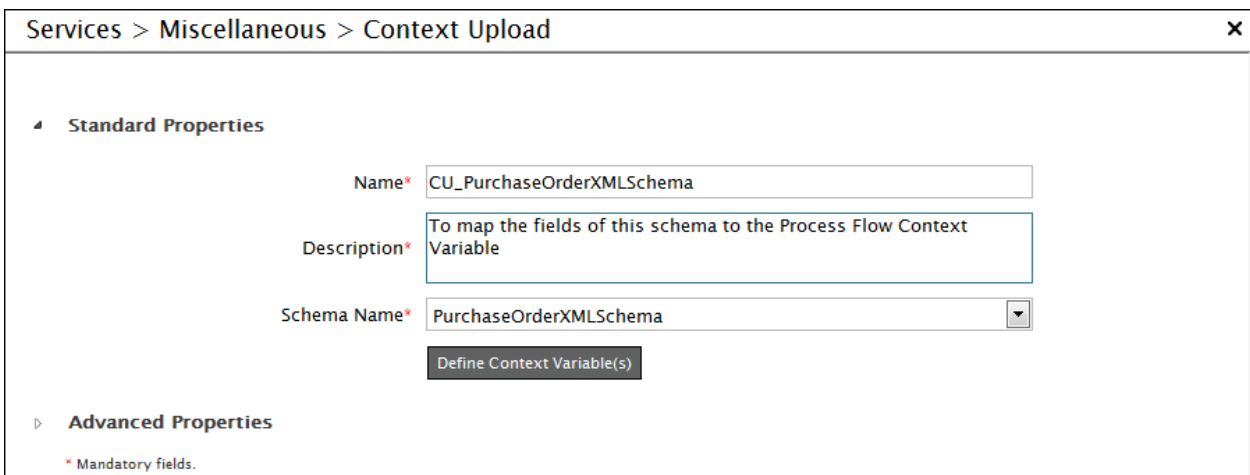
Figure 612: Create Context Upload screen

6. To define the context variable, click the **Define context variable(s)** button. The **Map Context Variable** screen is displayed.

7. Expand the selected schema by clicking **[+]**. All fields of selected schemas are displayed.

8. Enter a name for the context variable in the textbox **Variable Name**.

9. Select the schema element, which you want to map with the above defined variable. The XPath of the selected element is displayed in the textbox **Mapping**.

> ℹ️ The Context Upload variable accepts only string and list as parameters. When it is used in a process flow, then you need to specify the XPath value. If you select 'String' as the Data Type property, then the first XPath value is used.

10. Click the **Apply** button. Value of the selected schema element is displayed in the textbox **Variable Value** (refer to Figure 610).

11. Repeat step 8 to11 to map the context variable with other elements.

12. Click **OK** button to return to the Error! Reference source not found. screen.

> ℹ️ To learn about Advanced Properties refer to [Changing Advanced Properties](#) section.

13. Click the **Save** button.

CREATING STORED PROCEDURE

A stored procedure is a group of SQL statements that form a logical unit and perform a particular task. Stored procedures are used to encapsulate a set of operations or queries to execute on a database server. Stored procedures can be compiled and executed with different parameters and they may have any combination of input, output, and input/output parameters.

Limitation:

- Adeptia Server stored procedure activity is supported for MS SQL, Oracle and Sybase version 9.0.2.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Prerequisites

- *Database Info* activity must be created before creating *Stored Procedure* activity.

Using Adeptia Server's Stored Procedure activity, you can execute a database stored procedure. Stored Procedure activity takes IN parameters from process flow context. Therefore, you need to set the value of IN parameters in the process flow context. To do so, follow the steps below.

Steps to set the values of IN or INOUT parameters using put-context-var:

1. Click hierarchy structure in the **Repository View** panel. Expand the **Action** list and select the **put-context-var** action and drag it to the Graph Canvas area just before the stored procedure activity.

2. Connect the put-context-var action to this activity (see Figure 613).
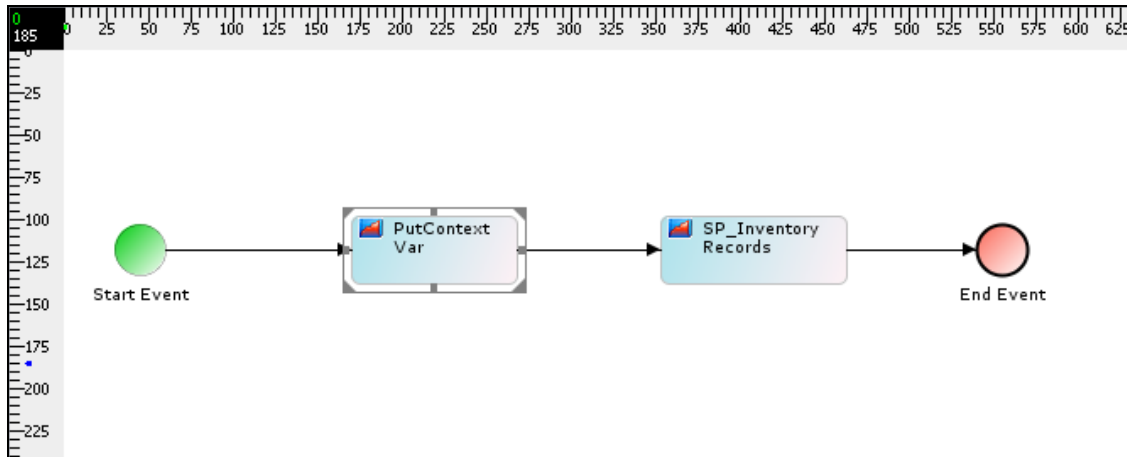
Figure 613: Connect Put-Context-Var to activity

3.   Right-click **put-context-var** and select **View Properties.**

Its properties are displayed in the **Properties Panel** in the Bottom Pane (see Figure 614).
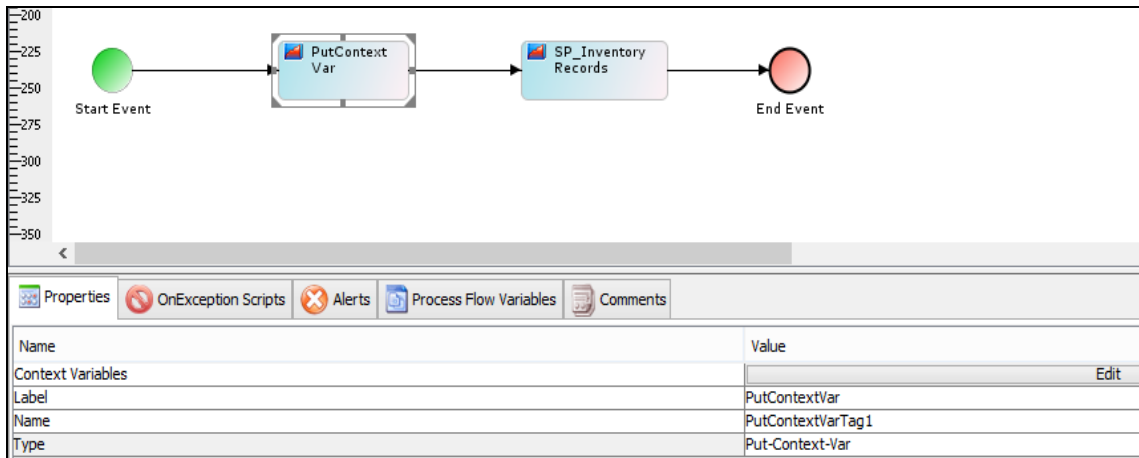
Figure 614: Properties of Put-Context-Var

4.   Click the **Edit** button to edit the value of context variable. The *Edit Context Variables* dialog box is displayed.

5.   Click **Add Variable** ( ) to add new context variable. The *Context Variable Information* screen is displayed.

6.   Select the Stored Procedure activity from the **Activity Name** dropdown list.

> ℹ️   As you select store procedure activity name in the put-context-var, then two property are displayed in the **Variable Name** dropdown list.

7.   Select the IN or INOUT parameter from **Variable Name** dropdown list.

> ℹ️   After selecting a variable, you need to edit this variable by adding "**.<<variableName>>**". (see figure below)
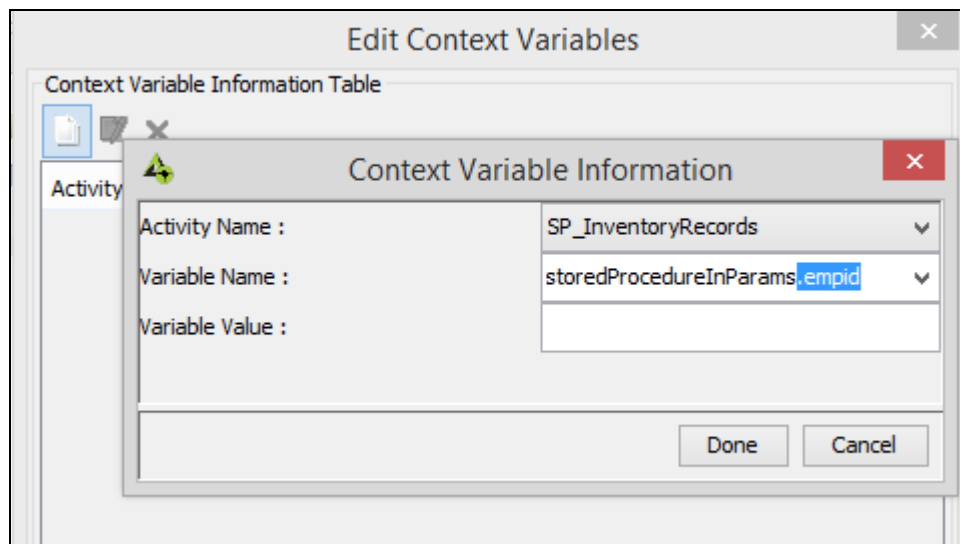
Figure 615: Context Variable Details for Defining Parameters

8. Give the value of parameter in Variable Value textbox. The entered information is displayed as shown in Figure 114.
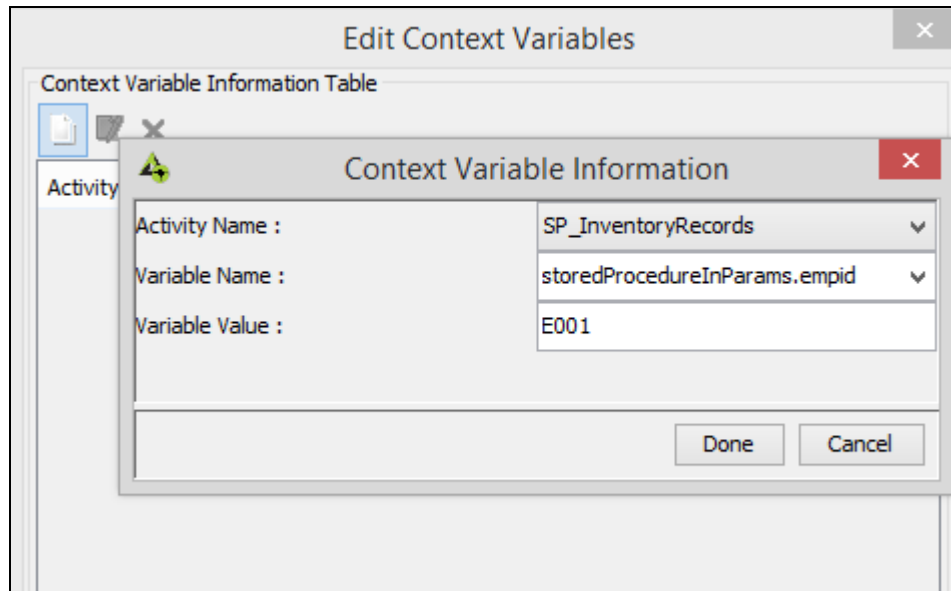
Figure 616: Context Variable Details for Defining Parameter Values

9. Click **Done** to close the **Context Variable Information** screen. This takes the control back to the **Edit Context Variables** screen. The newly created variable is added to the list of existing context variables.

10. Click **Done** to close **Edit Context Variables** screen and return to Process Designer.

11. Save the process flow and exit from Process Designer.

> ℹ️ You can also set this input variable using Process flow Variable or custom plugin.

For Custom plugin and Process flow variable, if the selected stored procedure has IN parameters as *empid*, you have to set an input variable with the name *Service.<ActivityName>.InParams.empid,* where *<Activity Name>* is the name of the stored procedure activity, which is used in the process flow.

Variable name for INOUT parameter will be *Service.<ActivityName>.InOutParams.count,* where *<Activity Name>* is the name of the activity, which is used to execute the process flow and count is the INOUT parameter of the stored procedure.

Similarly OUT parameters of the stored procedure are set to process flow context. For example if the selected stored procedure has OUT parameters as *salary*, the output variable is set in the process flow context as *Service.<ActivityName>.OutParams.salary*, where *<Activity Name>* is the name of the activity, which is used to execute the process flow. You can further use this variable and its value is the process flow. Value of output variable set by stored procedure activity, is always in string format. You need to type cast it in required format. Stored procedure doesn't generate a stream. Therefore, you have to use context source activity after stored procedure activity. To know how to create a context source, refer to the section Using Context Source and Context Target.

Steps to create Stored Procedure activity

1.   On the Adeptia Suite homepage, click the **Develop** tab.

2.   Go to **Services > Miscellaneous** and then click **Stored Procedure**.

     The *Manage Stored Procedure* screen is displayed (see Figure 617).

Figure 617: Manage Stored Procedure

3.   Click the Create New link. The **Create Stored Procedure** screen is displayed (see Figure 618).
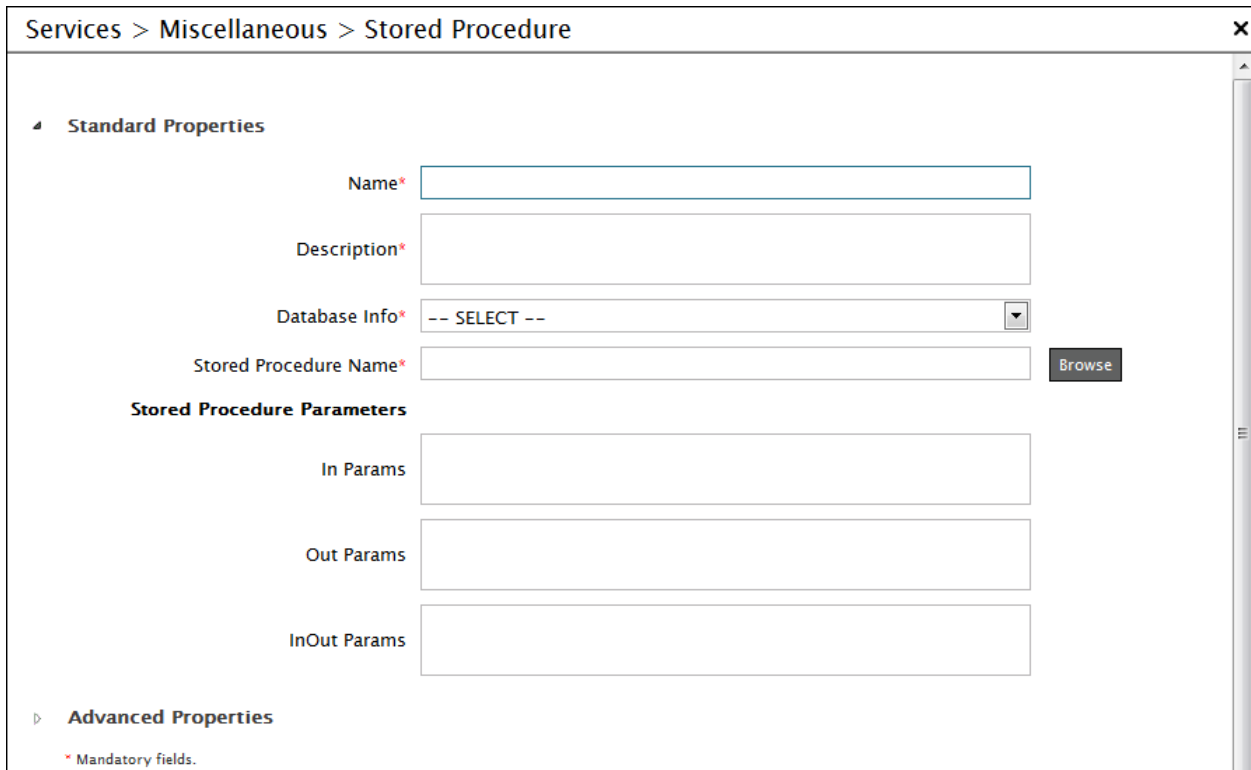
Figure 618: Create Stored Procedure

4.   Enter the name and description for new stored procedure activity in the textbox **Name** and *Description* respectively.

5.   Select the *database* info activity from the dropdown list **Database Info Id**.

> ℹ   To learn how to create Database Info activity, refer to the section *Creating Database Info* in *Administrator Guide*.

6.   To select the database stored procedure, click the **Browse** button. The **Select Stored Procedure** screen with list of stored procedure is displayed (see Figure 619)
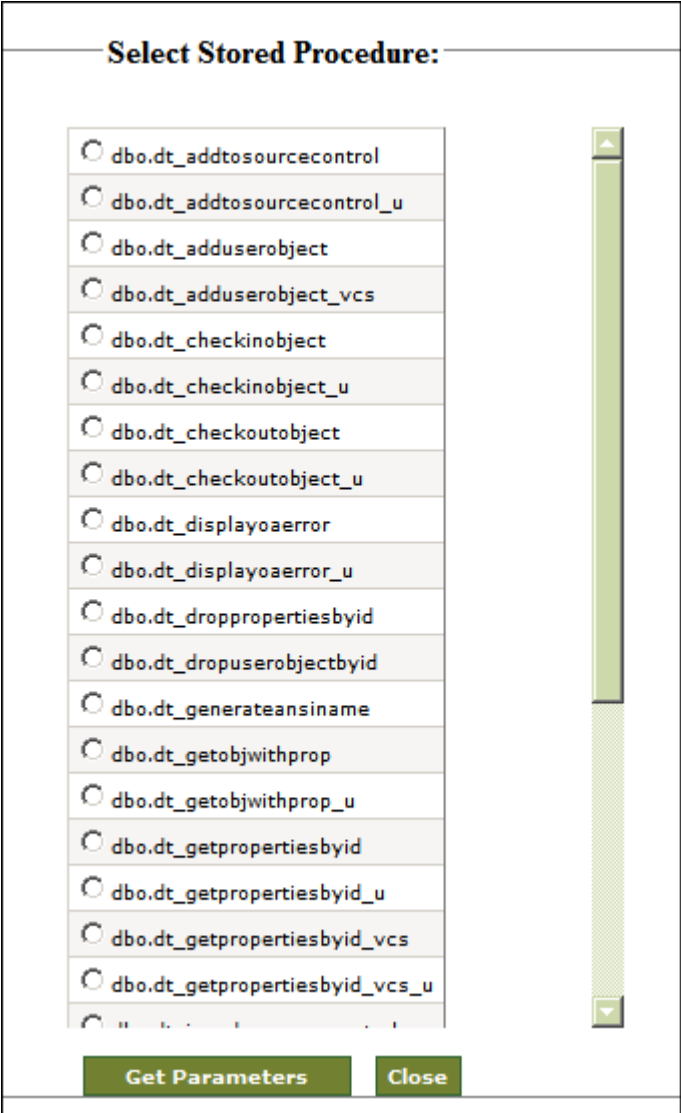
Figure 619: Select Stored Procedure

7. Select the required stored procedure and click the **Get Parameters** button. The **Stored Procedure Parameter** screen is displayed with list of parameters (see Figure 620).
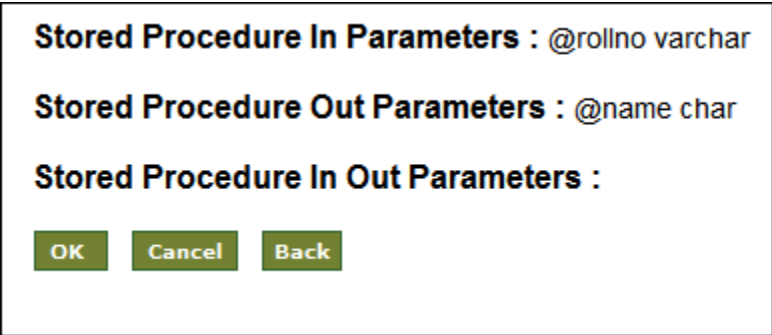
Figure 620: View Parameters

8. Click **OK** to return to the Stored Procedure activity screen. Parameters of the selected procedure are populated in **Stored Procedure Parameters** field (see Figure 621).

Figure 621: Manage Stored Procedure

9.   In the Stored Procedure activity screen click the **Save** button.

CREATING MAIL NOTIFICATION ACTIVITY

This section covers the following topics:

- Creating Mail Notification Activity
- Creating Notification to send User Defined Message
- Creating Notification to send Process Flow Summary

Creating Mail Notification Activity

In the Adeptia Suite, Notification is used to send mail to users about the execution status of a process flow. You can add the Mail Notification activity anywhere in the process flow. You can add more than one Mail Notification activities in a process flow.

The Mail Notification activity is of two types:

- **User Defined Message**: This type of mail notification is used to send custom email message to any user during execution of a process flow. Any file can be attached to the mail.

- **Process Flow Summary**: This type of mail notification is used by the Adeptia Server to dynamically send summary of a process flow execution.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Creating Notification to Send User Defined Message

Prerequisites

- Mail Server Parameters must be configured before creating **Mail Notification** activity. To know how to configure the Mail Server Parameters, refer to the *Mail Server Parameters* section in the *Administrator Guide*.

Steps to create User Defined Message Notification

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Miscellaneous** and then click **Mail Notification**. The **Manage Mail Notification** screen is displayed (see Figure 622).

Figure 622: Manage Mail Notification

3. Click the Create New link. The *Create Mail Notification* screen is displayed.

4. Enter the name of the new Mail Notification in the textbox **Name**. Then, enter the description for the Mail Notification in the textbox **Description**.

5. Select User Defined Message from the dropdown list **Notification Type**.

6. Enter subject for the email message in the textbox **Mail Subject**.

7. Select the user(s) to whom you want to send the notification email from the textbox **To Adeptia user(s)**.

8. Enter the recipient(s) email address in the textbox **To Email Id(s) (comma separated)**.

> ℹ️ You can select the recipient of the notification mail either by selecting user from *To Adeptia user(s)* or by specifying email address in *To Email Id(s) (comma separated)* field.
>
> When you select user, the notification mail is sent to the email address specified while creating the user.

9. Enter the email message in the textbox **Message**.

> ℹ️ You can format your messages and also send images (Web Url) and links with it by using HTML tags in **Message** textbox. Formats that are supported by html work here as well.

For e.g., following are the code snippet to add image and link into mail notification message:

- For image:

  ```
  <html>
  <body>
  <h1>heading</h1>
  <img src="http://blog.newrelic.com/wp-content/uploads/java-logo.jpg" alt="some_text" width=200 height=200>
  </body>
  </html>
  ```

- For Link:

  ```
  <html>
  <body>
  <h1>heading</h1>
  <a href="https://www.google.co.in">Visit our Site</a>
  </body>
  </html>
  ```

10. To send a file(s) as attachment, select the *Attachment* checkbox.

11. Enter the file path and file name(s) in the textboxes **File Path** and **File Name** respectively (see Figure 623).

Figure 623: Create Mail Notification

> • To send multiple files as attachment, separate the values in the **File Name** field with commas.
> • To learn about Advanced Properties refer to section Changing Advanced Properties section.

12. Click the **Save** button.

Creating Notification to Send Process Flow Summary

Steps to create Process Flow Summary Notification

1. On the Adeptia Suite homepage, go to **Develop → Services → Miscellaneous** and then click on **Mail Notification**. This action will display you the *Manage Mail Notification* screen (see Figure 624).
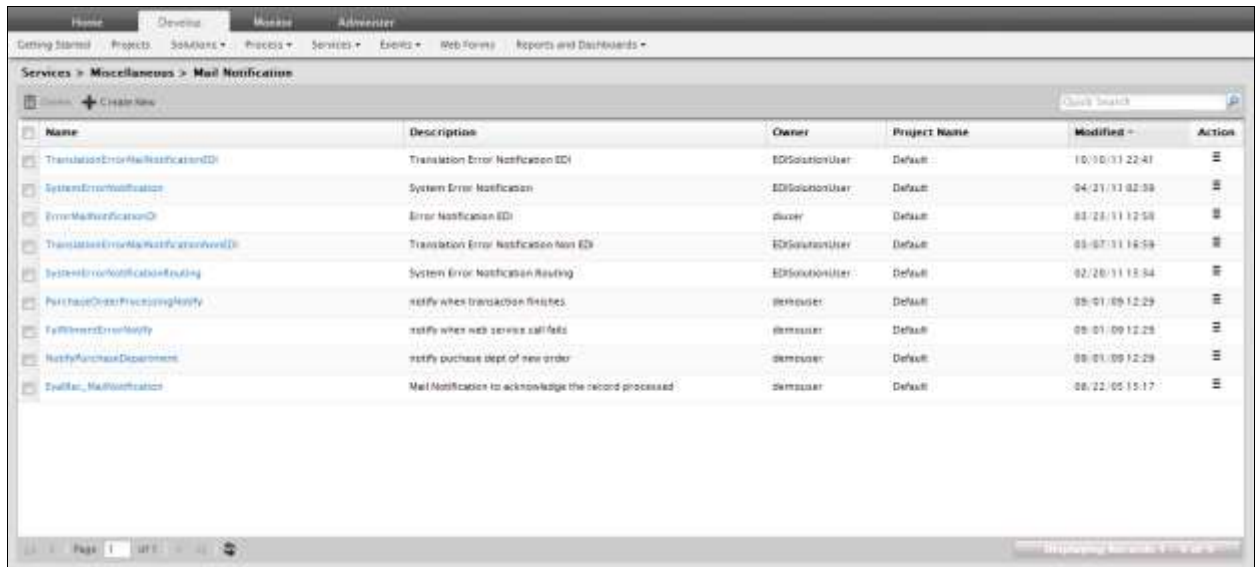
Figure 624: Manage Mail Notification Screen

2.   Click the Create New link. This action will display you the **Create Mail Notification** screen (see Figure 625).

New Mail Notification

▲ Standard Properties

Name*

Description*

Notification Type* User Defined Message

Mail Subject*

To User(s)
None
admin (Default Administrator)
B2BUser (Owner of sample B2B Trading Partner setup objects.)
demouser (Demo User)

To Email-Id(s) (comma separated)

Message

Notification Criteria Running or Executed Successf

Attachment ☐

File Path

File Name

▷ Advanced Properties

* Mandatory fields.

Save

Figure 625: Create New Mail Notification

3.   Enter the name of the new mail notification in the textbox **Name**. Then, enter the description for the mail notification in the textbox **Description**.

4.   Select Process Flow Summary from the dropdown list **Notification Type**.

5.   Enter subject for the email message in the textbox **Mail Subject**.

6.   Select the user(s) to whom you want to send the notification email from textbox **To Adeptia user(s)**.

7.   Enter the recipient(s) email address in the textbox **To Email Id(s) (comma separated)**.

> ℹ️ You can select the recipient of the notification mail either by selecting user from To Adeptia user(s) or by specifying email address in To Email Id(s) (comma separated) field.
>
> When you select user, the notification mail is sent to the email address specified while creating the user.

8. Select one of the criteria from the dropdown list **Notification Criteria**. All criteria are explained in the table below.

Table 1: Notification Criteria

Notification Criteria	Description
Running or Executed Successfully	Email is sent only when the process flow is running or executed successfully.
Failure	Email is sent only when the process flow execution is failed. However, if any activity before the mail notification fails, then all activities (including Mail Notification activity) are skipped and no email is sent.
	Thus, it is recommended to use the Mail Notification activity with the End Event of process flow. To know how to use Mail Notification Activity with End Event of the Process Flow, refer to Attaching End Process (Mail Notification) to Process Flow section.
Always	Email is sent whether the process flow execution is successful or failed. However, if any activity before the mail notification fails, then all activities (including Mail Notification activity) are skipped and no email is sent.
	Thus, it is recommended to use the Mail Notification activity with the End Event of process flow. To know how to use Mail Notification Activity with End Event of the Process Flow, refer to Attaching End Process (Mail Notification) to Process Flow section.

> To learn about Advanced Properties refer to Changing Advanced Properties section.

9. Click the **Save** button.

CREATING FILE REFERENCES

In the Adeptia Suite, you need to create a file reference activity when your WSDL or XSD file, in your Web Services activity or XML Schema activity, is referring to an external WSDL or XSD file. This is possible in the following two scenarios:

- When the WSDL file, which you use to create your Web Service activity, refers to an external WSDL or XSD file
- When the XSD file, which you use to create your XML Schema activity, refers to an external XSD file

In the previous version of the Adeptia Suite, if you need to create these activities then you would have to manually copy the file on the server where the Adeptia Suite is installed. All you now have to do is, create a File References activity and include it into your schema or web service activity.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Creating a File References Activity

Steps to create a file references

26.   On the Adeptia Suite homepage, click on the **Develop** tab.

27.   Go to **Services → Miscellaneous → File References**. This action will show you the *Manage File References* screen (see Figure 626).

Figure 626: Manage File Reference Screen

28.   Click on the **Create New** link. This action will show you the *New File References* screen (see Figure 627).

Figure 627: New File References

29.   Enter the name and description for the file reference activity in the *Name* and *Description* textboxes respectively.

30. Click on the **Browse** button. This action will show you the *Upload Referenced File* screen.

31. On the *Upload Referenced Zip* screen, click on the **Browse** button and navigate to the zip file which you want to upload to the server where your Adeptia Suite is installed and click on the **Open** button. The *Browse File* textbox will show you the name of the zip file that you have selected to upload. Click on the **Upload File** button to upload your zip file.

32. On the *New File References* screen, the *Upload Zip* textbox will show you the name of your zip file that you have just uploaded.

> You need to upload your referential WSDL or XSD file(s) in a single zip file only, Also just keep the folder structure of the zip file as per the references made by the WSDL or XSD file(s).

33. Click on the **Save** button.

ENABLING CACHING IN ADEPTIA SUITE

The cache is a smaller, faster memory which stores copies of the data from the most frequently used main memory locations and helps to reduce the average time to access memory. Adeptia Suite version 6.0 and above enables you to cache the Java Database Objects (JDO). For this, you need to enable caching, which is by default disabled. Enabling caching in Adeptia Suite provides the following advantages:

1. It improves the performance of the application by serving user with cached output.

2. It decreases server round trips for fetching data from database by persisting data in the memory.

3. It greatly reduces overhead from server resources.

In addition, Adeptia Suite enables you to set the following parameters:

- Maximum number of elements that can be cached, which is by default 5000 number of elements.

- Minimum idle time in seconds, which is by default 7200 seconds.

- Maximum time in seconds an object can stay in cache, which is by default 86400 seconds.

Steps to enable JDO Caching and set cache parameters

1. From the Adeptia home page, click on the **Administer** tab.

2. On the **Administer** tab, click on **Setup → Application Settings**. This action will display you the **Application Settings** screen (see Figure 628).
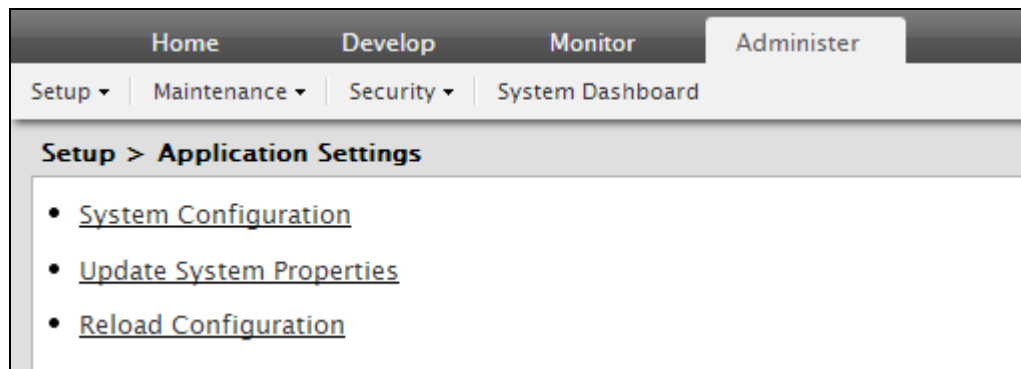
Figure 628: Application Settings Screen

3. On the **Application Settings** screen, click on the **Update System Properties** link, this action will display you the **Update System Properties** screen (see Figure 629).
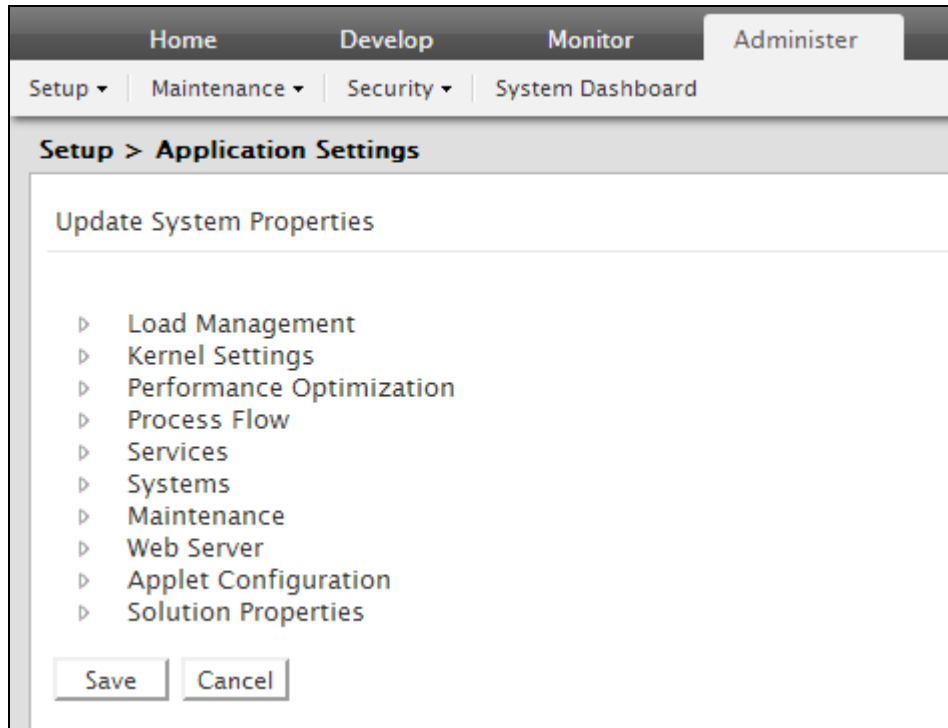
Figure 629: Update System Properties Screen

4. From the **Update System Properties** screen, go to **Performance Optimization → Caching → JDO**. This action will display you the JDO Caching properties (see Figure 630).
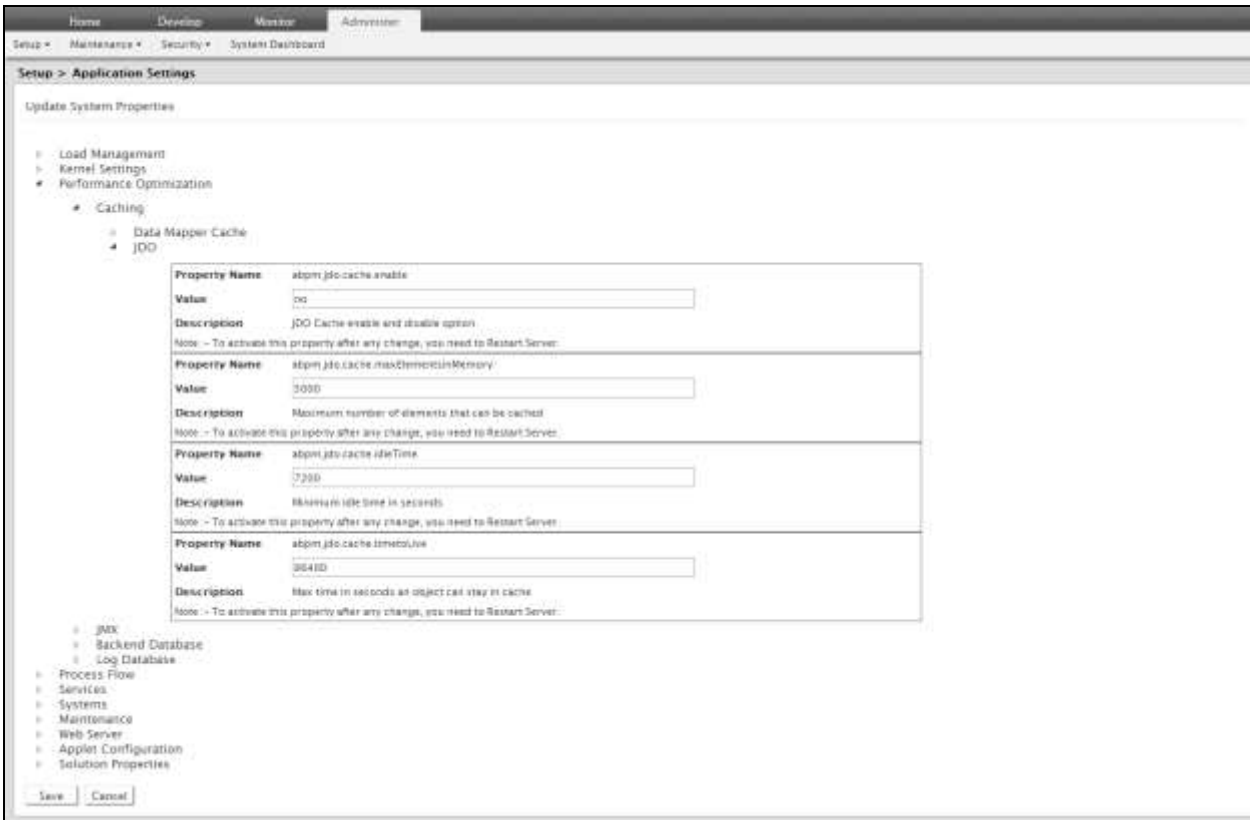
Figure 630: JDO Caching Properties

5.   Change the value of the **abpm.jdo.cache.enable** property from `no` to `yes`. This action will enable JDO caching.

6.   Change the other properties as per your choice.

> ℹ️ For more information on JDO caching properties, please refer to the Caching section in the Administrator Guide.

7.   Once you change the value of the properties, click on the **Save** button.

8.   Click on the **Reload configuration** link.

9.   Restart the server for the changes to take effects.

RESETTING CACHE

You can also reset JDO cache from Adeptia Suite GUI as per your requirements. For this, you need to set the value of the property **abpm.dataMapper.dblookup.cache.limit** available under Performance Optimization.

Steps to reset Cache from Adeptia Suite GUI

1.   On the Adeptia Suite homepage, click **Administer** tab and then click **Setup** menu. All the options of the **Setup** menu are displayed (see Figure 631).
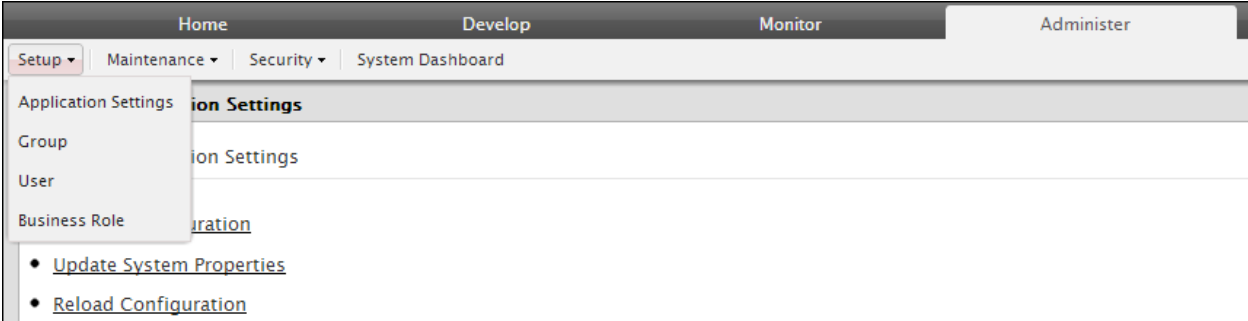
Figure 631: Setup Menu's options

2.   Select **Application Settings** option. The *Application Settings* screen is displayed (see Figure 632).
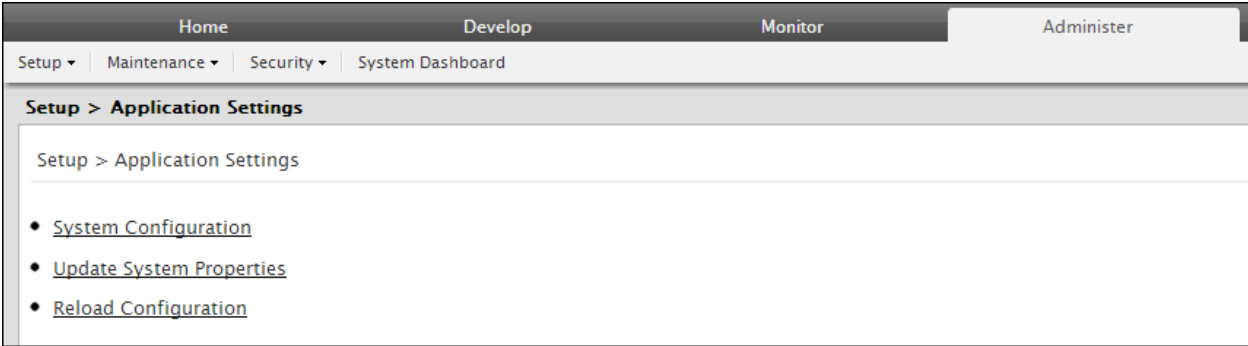
Figure 632: Application Settings

3.   Click **Update System Properties**. The *Update System Properties* screen is displayed (see Figure 633).
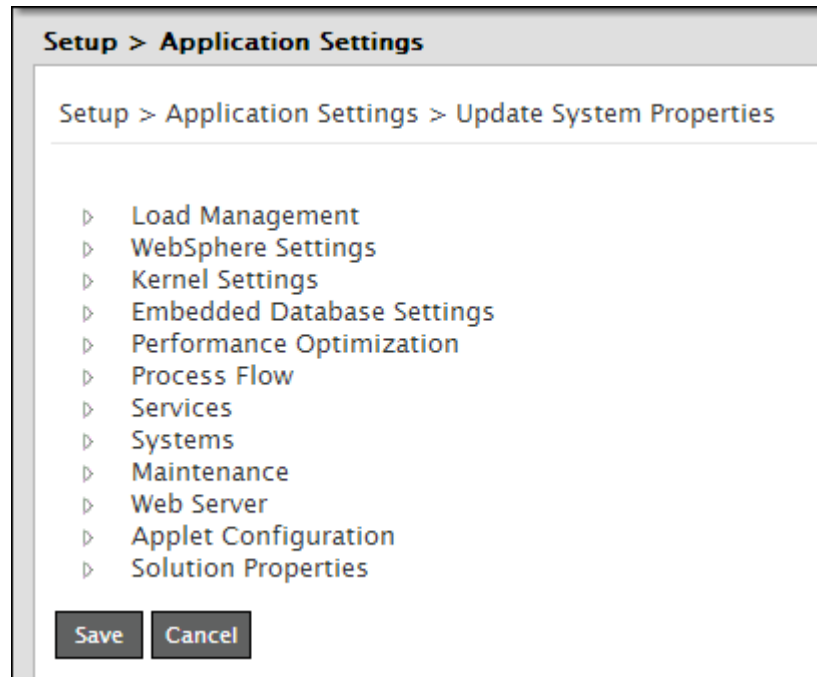
Figure 633: Update System Properties

4.   Click ◢ to expand Performance Optimization.

5.   Set the value of the property **abpm.dataMapper.dblookup.cache.limit** in the **Value** textbox (see Figure 634).

Figure 634: abpm.dataMapper.dblookup.cache.limit property

6.   Click **Save** button. A screen is displayed confirming that System Properties have been saved and you need to reload the configuration (see Figure 635).
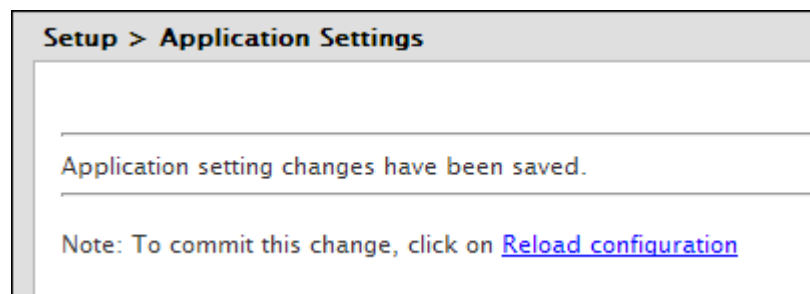
Figure 635: Reload Configuration

7.   To reload the configuration, click *Reload Configuration* link. A confirmation message is displayed that the configuration has been reloaded. If you do not want to reload the configuration changes right away, you can

reload it later on. To know how to reload the configuration later on, refer the Reloading System Configuration section of Administrator Guide.

- Changes made in the System Properties do not come into effect until you reload the configuration.
- In case following note is written for any property and you have change the value of that property, then you need to restart the Kernel and WebRunner to bring the change into effect.

    To activate this property after any change, you need to restart server.

- Value of the properties is not validated while editing. For detailed description of Adeptia Suite System Properties and their Possible Values, refer to Appendix A of Administrator Guide.

USING ENCRYPTION AND DECRYPTION

Encryption is the process of encoding the data in such a way that it can be read only by the authorized users. The purpose of encryption is to prevent third parties from recovering the original data. In an encryption process, the data (referred to as plaintext) is encrypted using an encryption algorithm, turning it into an unreadable ciphertext. This is usually done with the use of an encryption key, which specifies how the data is to be encoded. Any adversary may be able to see the ciphertext but should not be able to decode the original data. An authorized party, however, is able to decode the ciphertext using a decryption algorithm which usually requires a secret decryption key. The adversaries do not have access to this key. An encryption process usually needs a key-generation algorithm to randomly produce keys.

Adeptia enables you to apply encryption and decryption to the source and target files being transported via Adeptia Server. This enhances the security of the file being transported. To use encryption and decryption in Adeptia Suite, a new feature **Data Security** has been added in Adeptia Suite. You can now encrypt the source file to be sent and in the similar way, you can decrypt an encrypted file received via Adeptia Server.

KEY MANAGER

A Key is a series of numbers or symbols that are used to encode a message so that it can only be read by someone in possession of that key or a related key. A key allows both the sender and the recipient of the message to understand how the message has been encrypted and assures them that nobody else knows how it has been encrypted. It is the key that enables the recipient to properly decode the message. Adeptia Suite uses two different keys: a public key to encrypt the message, and a private key to decrypt it. The public key can only be used to encrypt the message and the private key can only be used to decrypt it. To secure information between two users, the sender encrypts the message using the public key of the receiver. The receiver then uses the private key to decrypt the message.

To store the keys, a new feature **Key Manager** has been added in Adeptia Suite. This feature enables you to manage both types of keys: public and private. These keys are further used to apply encryption and decryption in Adeptia Suite activities.

Key manager uses the following two types of key managers:

- PGP - This type of key manager contains 2 keys - public key and private key. You can use this type of key manager in your data security activity for encryption and decryption of data.
- SSH - This type of key manager contains only one key type, that is, private key. You can use this type of key manager if you want to communicate to a SFTP server.

This section covers the following:

- Steps to create a Key Manager activity
- Import key or key ring

Steps to create a Key Manager activity

1. On the Adeptia Suite home page, click the **Develop** tab.

2. Go to **Services** → **Security** → **Key Manager**. The *Manage Key Manager* screen is displayed (see Figure 636).

Figure 636: Manage Key Manager page

3. Click the **Create New** link. The *New Key Manager* screen is displayed (see Figure 637).

Figure 637: New Key Manager

4. Enter the name and description of the Key Manager in the text boxes **Name** and **Description** respectively.

5. Select a key manager type.

6. If you select the **PGP** key manager type then, select if you want to import a **Key** or a **Key Ring**.

> **Key** - Contains only a single key
>
> **Key Ring** - Contains multiple keys and when you select this radio button then, the Key Manager stores all the keys within the Key Ring.
>
> If you select the **SSH** key manager type then perform the steps 9 and 10.

7. Select the type of key from the **Key Type** drop-down list.

> **i**
>
> **Public** - Encrypts the data
>
> **Private** - Decrypts an encrypted data

8. To upload the key, click the **Browse** button and select the key. The path of the respective Key will be displayed in the text box **Key**.

> **i**
>
> Only the private keys require a password. The fields **Private Key Password** and **Confirm Password** will only be enabled when you select the option **Private** from the **Key** drop-down list.

9. If you select the **SSH** key manager type then, enter the private key password in **Private Key Password** text box.

10. Re-enter the private key password in the **Confirm Password** text box.

11. Click **Save** to save the Key Manager.

Similarly, you can create a Key Manager activity to decrypt an encrypted file received by the Adeptia Server (see Figure 638).

New Key Manager   ✕

▲ Standard Properties

                        Name*   `Key_Manager_to_Decrypt_a_File`

         Description*   `Key_Manager_to_Decrypt_a_File`

   Key Manager Type   ◉ PGP   ◯ SSH

             Import   ◉ Key   ◯ Key Ring

          Key Type   Private   ▾

                Key   Choose File   No file chosen

▷ Advanced Properties

   * Mandatory fields.

                                                         Save

Figure 638: Key Manager to Decrypt an Encrypted Source File

The key manager activity to decrypt an encrypted file requires the Private Key and only the private keys require a password.

Import Key or Key Ring

If you want to import a key or a key ring into your Key Manager after the creation of Key Manager then, follow the below steps:

1. On the *Manage Key Manager* screen, right-click on the Key Manager activity of your choice.

2. Select the **Import Key Ring (Public/Private)** option from the context menu (see Figure 639).

Figure 639: Import Screen

3. On the *Import* screen, select the **Import** type, **Key Type**, and mention the **Key File Path**.

4. Click the **Submit** button.

DATA SECURITY

A new feature **Data Security** has been added in Adeptia Suite. This feature enables you to define the action, which can be either Encryption or Decryption that you want to apply to your Adeptia Suite activities. This activity uses the keys created using the Key Manager.

Steps to create Data Security

1. On the Adeptia Suite Home page, click the **Develop** tab.

2. Go to **Services > Security > Data Security**.

   The *Manage Data Security* screen is displayed (see Figure 640).

Figure 640: Manage Data Security

3. Click the **Create New** link. The *Create Data Security* screen is displayed (see Figure 641).

Figure 641: New Data Security activity to encrypt a Source File

4.   Enter the name and description of the Data Security in the text-boxes Name and Description respectively.

5.   Select the type of Data Security from the drop-down list **Type**.

> Adeptia Suite version 6.0 and above supports the type **PGP**.

6.   **Select** the type of action from the drop-down list **Action**. This drop-down list has the following options:

- Encryption
- Decryption

If you want to create a Data Security activity for decryption, select **Decryption**. By default, the option **Encryption** is selected.

7.   Select the Key Manager activity that you have created from the drop-down list **Key Manager**.

> This drop-down list will display the Key Manager activities based on the type of action that you have selected in the previous step. For example, if you have selected **Encryption** from the **Action** drop-down list, then the **Key Manager** drop-down list will display the all the Key Manager activities created using the Public Keys i.e. created for encryption.

8.   Click **Save** to save the Data Security activity.

Similarly, you can create a Data Security activity to decrypt an encrypted source file (see Figure 642).

Figure 642: Data Security activity to decrypt an encrypted Source File

SAMPLE PROCESS FLOWS

Consider the following sample process flow which displays how you can encrypt a source file in Adeptia Suite. This process flow uses the new feature **Data Security**. The Data Security activity to encrypt a source file uses the **Key Manager** activity that has been created using a Public Key.
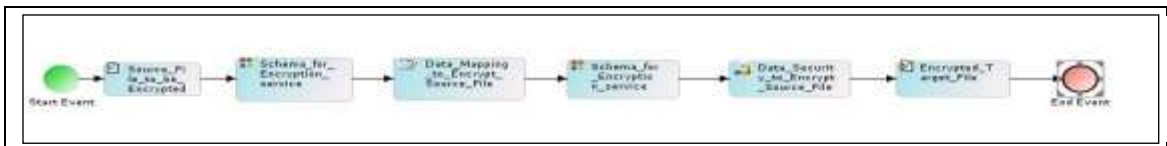
Figure 643: Process Flow to Encrypt a File

Consider the following sample process flow which displays how you can decrypt an encrypted source file in Adeptia Suite. This process flow also uses the new feature **Data Security**. However, the Data Security activity to decrypt an encrypted source file uses the **Key Manager** activity that has been created using a Private Key.
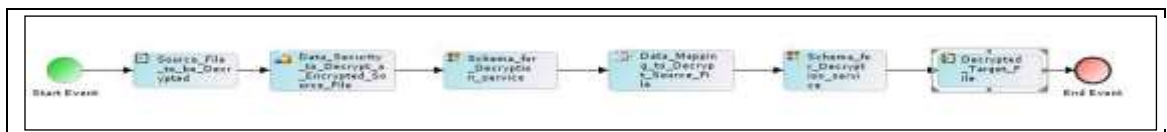
Figure 644: Process Flow to Decrypt an Encrypted File

Note the use of Data Security activity for encryption and decryption. For encrypting a source file, you need to use the Data Security activity after Data Mapping whereas for decrypting an encrypted source file, you need to use the Data Security activity before Mapping.

USING REPORTS AND DASHBOARDS

Dashboard collects data from various data sources, even outside Adeptia Server. As a user executes Dashboard, it displays the results in a graphical format with four different components clubbed together to form a single Dashboard. Monitoring Dashboard provides Adeptia Server user with real-time visibility into the performance of decisive services.

Monitoring Dashboard enables Administrator to analyze discrepancies between expected and actual performance and to monitor compliance with IT operational best practices in real-time.

Dashboard enables the user to represent data in the form of *PIE chart*, *Bar Chart*, *String chart* and *Table chart*.

Dashboard applet represents data using the four components:

- Bar Chart
- String Chart
- Table Chart
- PIE Chart

Dashboard enables business users to view business level information like the number of orders received per customer (Bar Chart), Orders processed per business users (Bar Chart), Orders received per item (PIE Chart), List of new customers today (Table Chart), maximum order of the day (String Chart).

Using Dashboard can be broadly classified into three parts:

- Creating Dashboard Component
- Designing Dashboard
- Executing Dashboard

Prerequisites

- To create any Dashboard activity, *Database Driver* and *Database Info* should be already created and table used for selection of columns for customized Dashboard creation should exist.
- JRE 1.5 needs to be installed on your system to open the Dashboard applet.
- The *Pop-up Blocker* needs to be disabled in the web browser, to open the Dashboard applet. By default, the *Pop-up Blocker* is enabled.

CREATING CUSTOM REPORT

A Custom Report can be used to generate customize report of any set of data. Using Custom Report, you can also generate report for already executed or running process flows.

A custom report activity is created using the custom report template (jrxml file), which is generated by the *iReport* software. This custom report activity is further used to select the process flow and generate reports into PDF, XLS, CSV, TXT and HTML format.

iReport is a third party software which provides a graphical tool to design report template. For detailed information about iReport software refer to following website.

http://community.jaspersoft.com/project/ireport-designer/resources#Tutorials

This feature is available in:

Enterprise	Premier	Profession	Express
✓	✓		

Steps to create a custom report activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Reports and Dashboards** > **Custom Report**. The *Manage Custom Report* screen is displayed (see Figure 645).

Figure 645: Manage Custom Report

3. Click the Create New link. The **Create Custom Report** screen is opened.

4. Enter the name of Custom Report in the textbox **Name**. Then, enter the description for the Custom Report in the textbox **Description**.

5. Select the Database Info activity which points to the database Server to fetch the data, from the dropdown list **Database Info ID** (see Figure 646).

Figure 646: Create Custom Report

> **i** To learn how to create Database Info activity, refer to *Creating Database Info* section in the *Administrator Guide*.

6. To upload the Jrxml file (custom report template) generated using *iReport* software, click the **Upload Jrxml File** button. The *Upload Jrxml File* window is displayed.

7. Click the **Browse** button to select the Jrxml file. The path of the Jrxml file is displayed in **Browse File** textbox.

8. Click the **Upload File** button. The file name(s) is displayed under the heading **File Names** (see Figure 647).
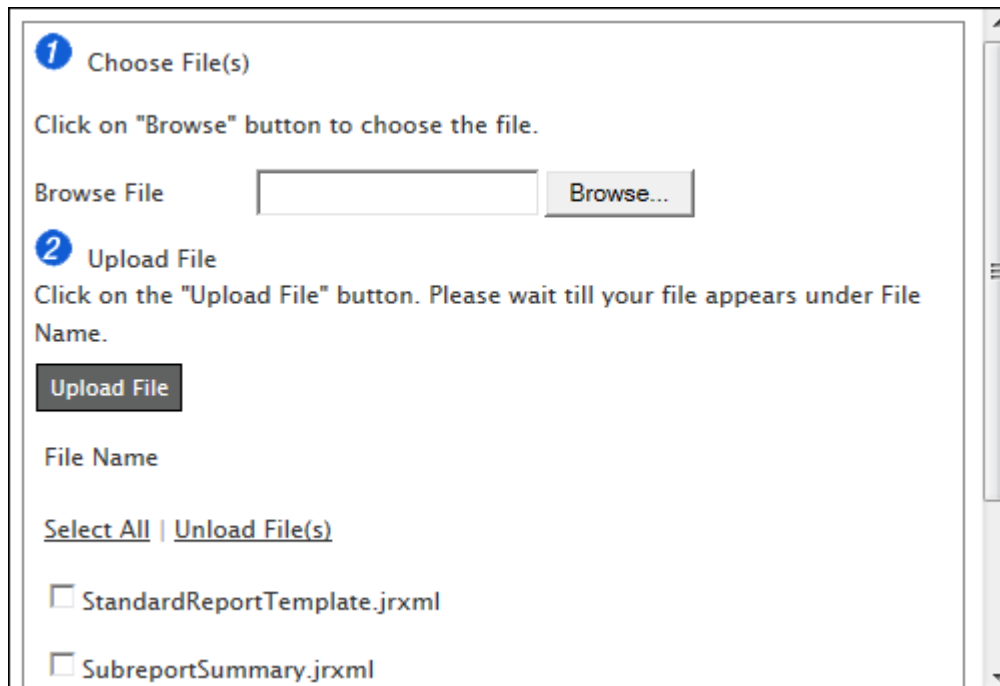
Figure 647: Upload jrxml file

9. Click the **Finish** button. The uploaded *jrxml* file(s) is displayed in the textbox **Upload Jrxml files** as comma separated values (see Figure 648).

Figure 648: Create Custom Report Activity

10.   To change value of user defined Parameter defined in the Jrxml file, click the **User Defined Parameter** button. The **Jasper Report Parameter** screen is displayed with list of parameters defined in the Jrxml file (see Figure 649).

Figure 649: Define Jasper Report Parameters

11.   Enter the value of the parameter in the **Parameter Value** field.

> **i** In *Parameter Value* field you can enter any constant value or any value which is set in context. To enter the constant value, directly enter the value in the *Parameter Value* field. To enter the value from the context, enter the name of the context variable starting and ending with $$. For example $$Eid$$.

12. Click **OK** to close the **Jasper Report Parameter** screen.

13. Select the format in which the custom report is to be generated, from the dropdown list **Report Type**.

14. Click the **Save** button.

> **i** A custom report can be used as a service in a process flow. For details, refer to the section Using Custom Report in Process Flow.
> A custom report activity named *StandardprocessflowReport* comes pre-created with the Adeptia Server. You can use that activity to generate the report for a Process Flow.

CREATING DASHBOARD COMPONENT ACTIVITY

A Dashboard Component activity can be created using one of the following:

- Bar Chart
- String Chart
- Table Chart
- PIE Chart

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Creating Bar Chart Activity

Steps to create Bar Chart4

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Reports and Dashboards > Dashboard Component**.

   The *Manage Dashboard Component* screen is displayed (see Figure 650).

Figure 650: Manage Dashboard Component

3. Click the **Create New** link. The *Create Dashboard Component* screen is displayed (see Figure 651).

Figure 651: Create Dashboard Component

4. Enter the name and description of the new Dashboard Component in the textboxes **Name** and **Description** respectively.

5. Select Bar Chart from the **Dashboard Component** dropdown list.

6. Select the appropriate Database Info, depending on the database you want to use, from the **Database Info Id** dropdown list.

7. Click the **Select Tables** button. The **Select Table** screen is displayed (see Figure 652).
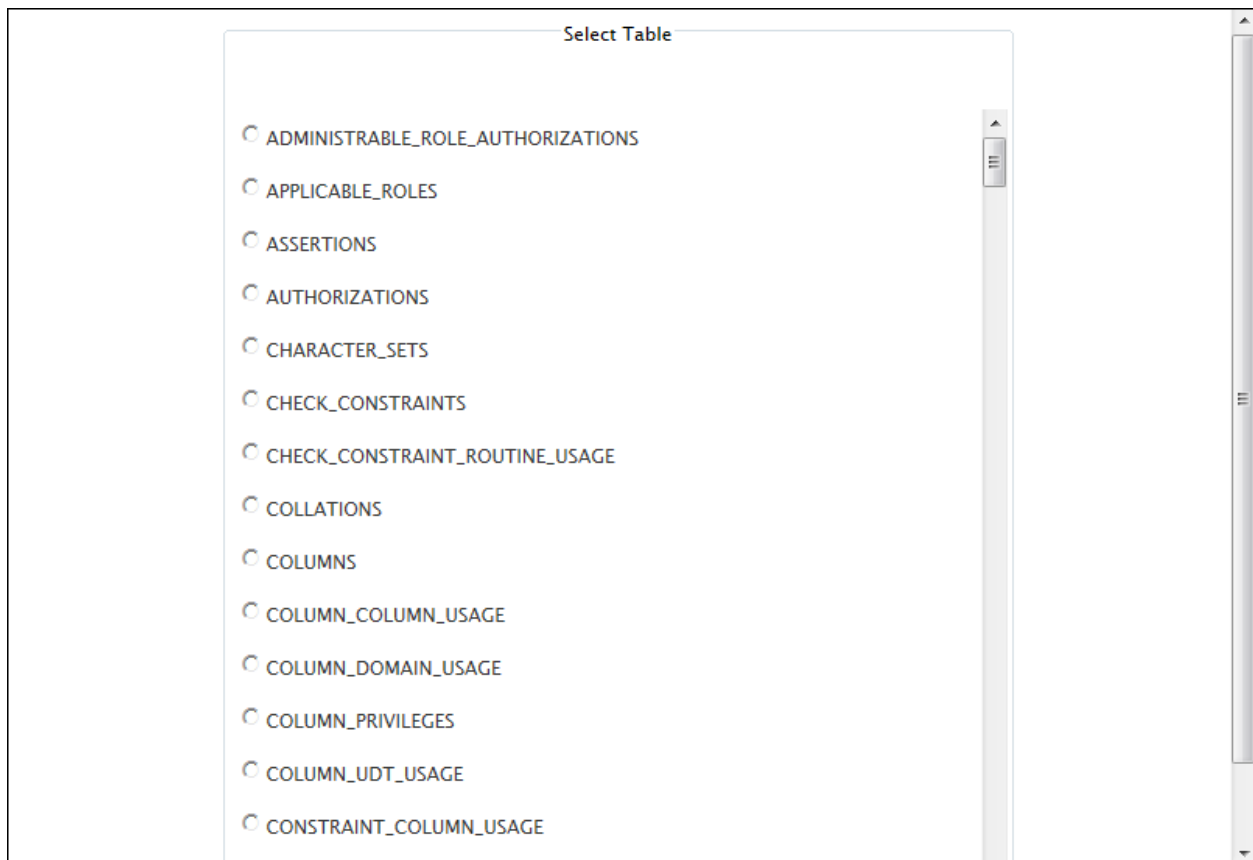
Figure 652: Select Table

8. Select the required table and click the **Get Columns** button. The **Columns in Bar Chart** screen is displayed (see Figure 653).
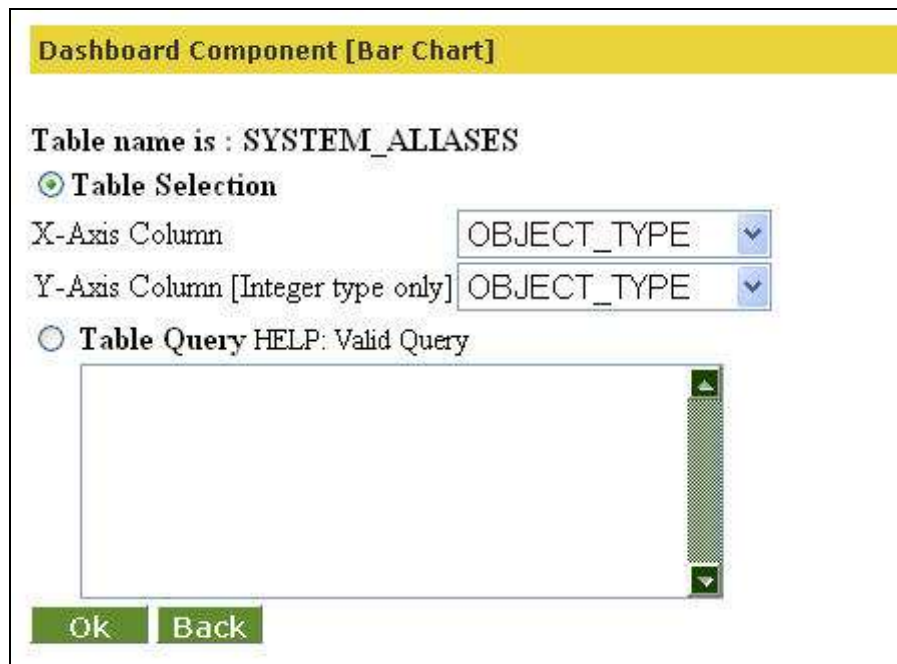
Figure 653: Select Columns for Bar Chart

9. Select the X-Axis and Y-Axis components for the Bar Chart from the dropdown lists **X-Axis Column** and **Y-Axis Column [Integer type only]** respectively.

> **i** In Bar Chart Component Y-Axis can take only integer values or values which could be evaluated to an integer e.g. a string with value "2". Any other value will cause erroneous behavior.
>
> You can write, SQL query to define X axis and Y axis of Bar chart. To write SQL query, click Table Query radio button and enter your query in the Table Query field.

10. Click the **Save** button to save the Bar Chart information.

Creating String Chart Activity

Steps to create String Chart

1. On the Adeptia Suite homepage, go to **Configure > Reports and Dashboards** and then click **Dashboard Component**.

   The *Manage Dashboard Component* screen is displayed (refer to Figure 650).

2. Click the Create New link. The **Create Dashboard Component** screen is displayed (refer to Figure 651).

3. Enter the name and description for the new Dashboard Component in the textboxes **Name** and **Description** respectively.

4. Select String Chart from the dropdown list **Dashboard Components**.

5. Select the appropriate Database Info, depending on the database user wants to use, from the dropdown list **Database Info Id**.

6. Click **Select Tables** button. The **Select Tables** screen is displayed (refer to Figure 652).

7. Click **Get Columns** button. The **Select Fields** screen is displayed (see Figure 654).
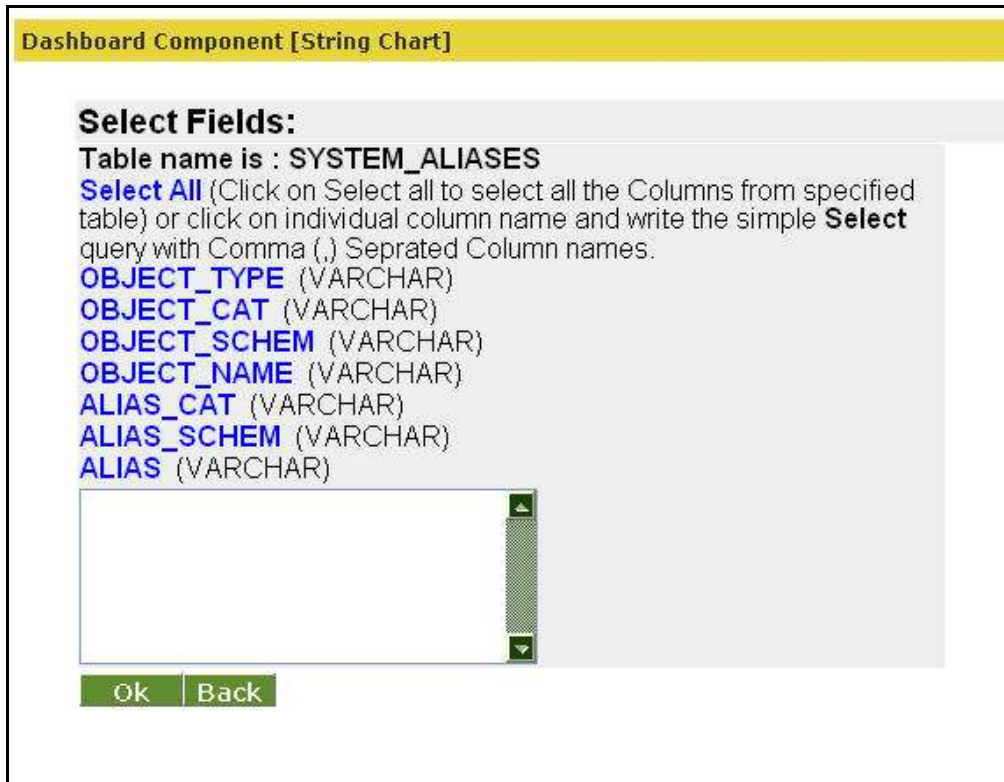
Figure 654: Select Fields

8.   Click **Select All** to select all the columns from specified table or click individual column name and write the simple Select query with Comma (,) Separated Column names and click **OK** button to return to the *Create Dashboard Component* screen.

9.   Click the **Save** button.

Creating Table Chart Activity

Steps to create a Table Chart

1.   On the Adeptia Suite homepage, go to **Configure > Reports and Dashboards** and then click **Dashboard Component**.

      The *Manage Dashboard Component* screen is displayed (refer to Figure 650).

2.   Click the Create New link. The **Create Dashboard Component** screen is displayed (refer to Figure 651).

3.   Enter the name and description for the new Dashboard Component in the textboxes **Name** and **Description** respectively.

4.   Select Table Chart from the dropdown list **Dashboard Components**.

5.   Select the appropriate Database Info, depending on the database user wants to use, from the dropdown list **Database Info Id**.

6.   Click the **Select Tables** button. The **Select Table** screen is displayed (refer to Figure 652).

7.   Click the **Get Columns** button. The **Select Fields** screen is displayed (refer to Figure 654)

8.   Click **Select All** to select all the columns from specified table or click individual column name and write the simple Select query with Comma (,) Separated Column names and click **OK** button to return to the *Create Dashboard Component* screen.

9.   Click the **Save** button.

Creating PIE Chart Activity

Steps to create a PIE Chart

1.   On the Adeptia Suite homepage, go to **Configure** > **Reports and Dashboards** and then click **Dashboard Component**.

      The *Manage Dashboard Component* screen is displayed (refer to Figure 650).

2.   Click the Create New link. The *Create Dashboard Component* screen is displayed (refer to Figure 651).

3.   Enter the name and description for the new Dashboard Component in the textboxes **Name** and **Description** respectively.

4.   Select PIE Chart from the dropdown list **Dashboard Components**.

5.   Select the appropriate Database Info, depending on the database user wants to use, from the dropdown list **Database Info Id**.

6.   Click the **Select Tables** button. The **Select Table** screen is displayed (refer to Figure 652).

7.   Click the **Get Columns** button. The **Select Columns** screen is displayed (refer to Figure 653).

8.   Select the X-Axis and Y-Axis for the PIE Chart from the *X-Axis Column* and *y-Axis Column [Integer type only]* dropdown lists respectively.

> In PIE Chart Y-Axis Column can take only integer values or values which could be evaluated to an integer e.g. a string with value "2". Any other value will cause erroneous behavior.
>
> You can write, SQL query to define columns of PIE chart. To write SQL query, click Table Query radio button and enter your query in the Table Query field.

9.   Click the **Save** button.

CREATING DASHBOARD DESIGN ACTIVITY

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to create a Dashboard Design activity

1.   On the Adeptia Suite homepage, click the **Develop** tab.

2.   Go to **Reports and Dashboards > Dashboard Design**.

      The *Manage Dashboard Design* screen is displayed (see Figure 655).

Figure 655: Manage Dashboard Design

3.   Click the Create New link. The *Create Dashboard Design* screen is opened.

4.   Enter name and description of the new Dashboard Design in the textboxes **Name** and **Description** fields respectively.

5. Then select any of the components from the dropdown lists **Bar Chart**, **PIE Chart**, **Table Chart** and **String Chart**. You may select one component from each chart and any number of charts (see Figure 656).

Figure 656: Creating Dashboard Design

6. Click the **Save** button.

EXECUTING DASHBOARD DESIGN

Steps to execute a Dashboard Design activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Reports and Dashboards** > **Dashboard Configure**.

   The *Manage Dashboard Design* screen is displayed (refer to Figure 655).

3. Select the radio button adjacent to required dashboard design activity that you want to execute and then click the **Execute** link.

4. A Dashboard applet appears displaying the component that was chosen while creating the Dashboard Design activity (see Figure 657).
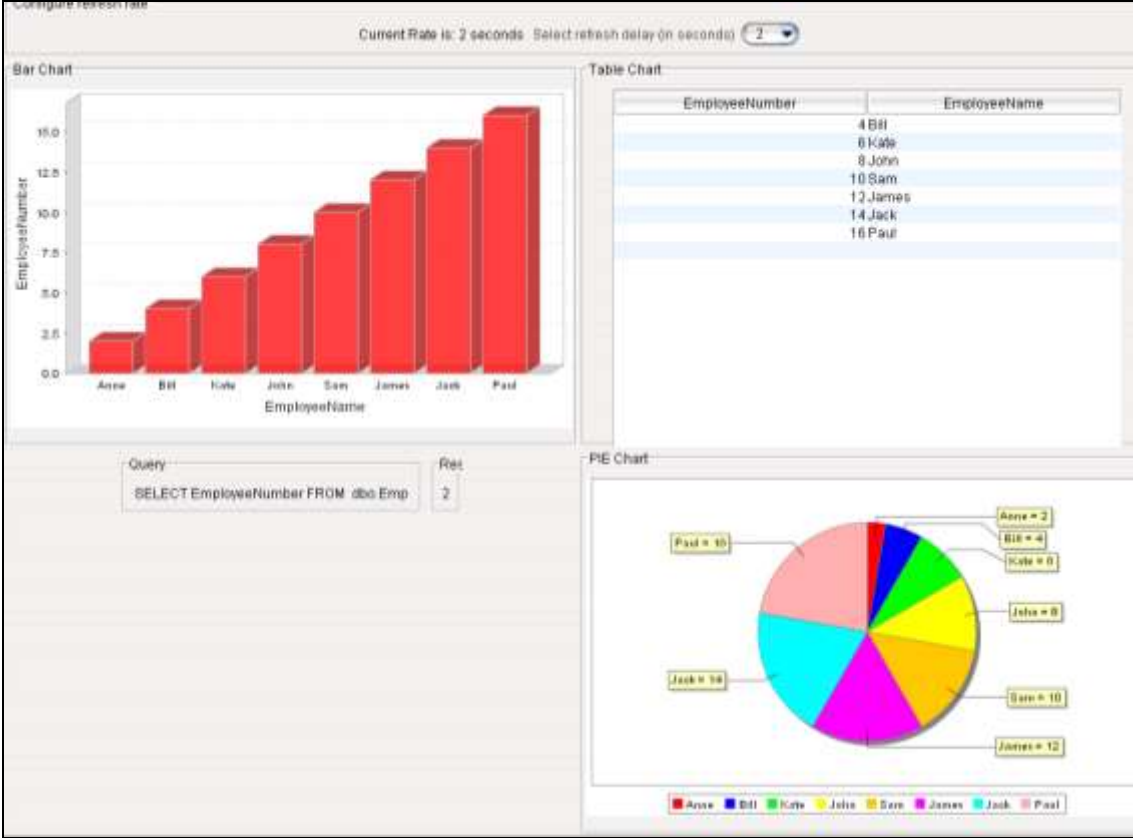
Figure 657: View Dashboard

To configure the refresh time, select the refresh time from the dropdown list **Select refresh delay (in seconds)**.

MANAGING ACTIVITIES

Managing activities involves creating new activities, editing or deleting the existing activities, and saving another instance of those activities. It also includes viewing a revision history of activities and a list of related activities associated with an activity. Creation of various Adeptia Server activities has been covered in previous sections.

This section allows you to perform the following tasks related to an activity:

- Searching an Activity
- Viewing Properties of an Activity
- Editing an Activity
- Deleting an Activity
- Viewing Revision History of an Activity
- Viewing Dependent Activities of an Activity
- Setting Default Permission for Activities
- Changing Advanced Properties of an Activity

For editing, deleting and saving another instance of activities, viewing revision history and list of related activities, refer to the sections below.
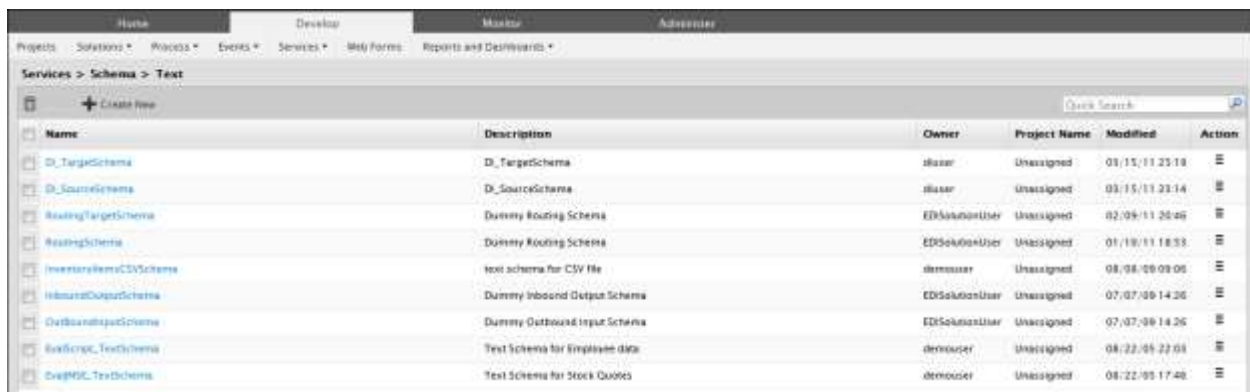
SEARCHING AN ACTIVITY

An activity can be searched by its name or description from the list of activities.

Steps to search an activity (for example Text Schema activity)

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Schema** and then click **Text**.

    The *Manage Text Schema* screen is displayed (see Figure 658).

Figure 658: Manage Activity

3. Enter the search criteria in the textbox **Search**. For example, if you want to search all the activities that have Routing in the Name or Description then enter *Routing* in the *Search* field (see Figure 659).
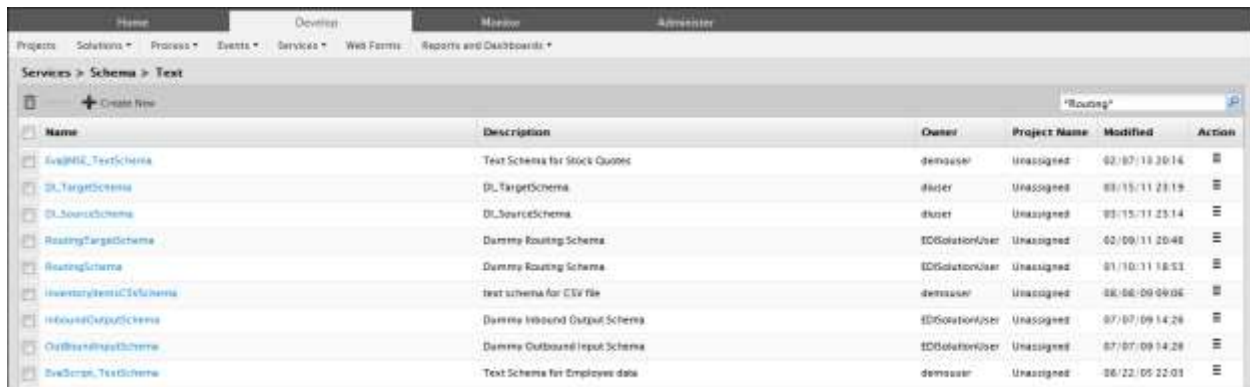
Figure 659: Enter Search Criteria

4. Click the **Search** button. The searched activity is displayed (see Figure 660).

Figure 660: Search Result

5. To close the search and view the listing of all activities, click X button which is placed within the Search box.

Using Wild Cards in Search

If you do not remember the entire name or description of the activity, you can use Wild Card characters to search the activity. Once you select the option from the *Select Search Option* dropdown list, you can use a Wild Card character in the *Criteria* field. The Wild Card characters supported by Adeptia are described in the table below.

Table 1: Wild Card characters supported by Adeptia

Wild Card Character	Description	Example
?	Signifies one character in the string	• Eval?MSE_TextSchema Searches for a string which has a character between Eval and MSE_TextSchema. Thus it displays EvalJMSE_TextSchema. • Eval???E?TextSchema Searches for a string which has three characters after Eval and one character after E. Thus it displays

Wild Card Character	Description	Example
*	Signifies multiple characters in a string	EvalJMSE_TextSchema. • Eval*E_TextSchema Searches for a string which has one or more characters after Eval and before E_TextSchema. Thus, it displays EvalJMSE_Text Schema. • Eval * Searches for a string which has one or more characters after Eval. In such a case, it can display more than one strings such as *EvalJMSE_TextSchema, EvalScript_TextSchema* *EvalXForm_ExcelSchema*, etc. You can select the string that you want from this list.

VIEWING PROPERTIES OF AN ACTIVITY

Steps to view properties of an Activity(for example Text Schema activity)

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Schema** and then click **Text**.

   The *Manage Text Schema* screen is displayed (refer to Figure 658).

3. In the selected activity row, click the **More Actions** ☰ icon in the **Actions** column, select the option **View**.

   Alternately you can also right click the activity and select the **View** option.

Figure 661: More Actions menu option: View

4. The *Summary* screen for the respective activity is opened, which displays the properties of the selected activity (see Figure 662).

Figure 662: View Activity Properties

5. Click **Close** button to return to the **Manage Activity** screen.

EDITING AN ACTIVITY

Steps to edit an activity (for example Text Schema Activity)

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** > **Schema** and then click **Text**.

   The *Manage Text Schema* screen is displayed (refer to Figure 658).

3. Click the activity name to directly open it in the edit mode or click the **More Actions** icon in the **Actions** column, select the option **Edit** (see Figure 663).

Figure 663: More Actions menu options: Edit

> **i** You can edit only those activities, in which you have write permission.

4. After changing the properties, click the **Save** button to save the changes. (see Figure 664).

Figure 664: Activity Edit mode

> **i** To save another instance of the edited activity with different name, change the activity name in the *Name* field and then click **Save As** button.

> **i** You can verify a source or target activity at design time. For this, click **Test**. This verifies the values in the fields of the activity and checks whether the source or target actually exists in the specified location. The verifications on the fields vary with each activity.

DELETING AN ACTIVITY

Steps to delete an activity

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services > Schema** and then click **Text**.

    The **Manage Text Schema** screen is displayed (refer to Figure 658).

3. Select the checkbox against activity that you want to delete and then click the **Delete** 🗑 icon.

A confirmation application messages is displayed (see Figure 665).

Confirm ✕

❓ Are you sure you want to delete Text Schema activity "DI_TargetSchema" ?

[Yes]   [No]
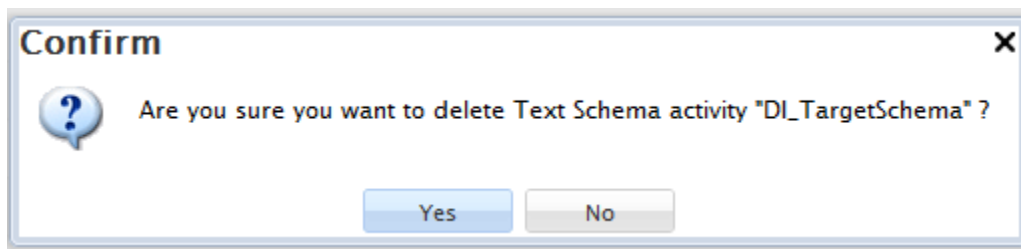
Figure 665: Delete an Activity

4. Click **Yes** button if you want to delete the activity.

VIEWING DEPENDENT ACTIVITIES OF AN ACTIVITY

The Dependent Activities of an activity displays a list of activities that are using or are dependent on the activity. It includes activities that are directly or indirectly dependent upon the selected activity. If an activity is edited, then all the related activities will, in turn, be affected.

For example, there is a database driver namely DBDriver1. This driver is used by the database info DBInfo. The database info DBInfo is further used by the database schema DBSchema. The DBSchema is loaded while mapping source and target elements.

When the mapping activity is used in a process flow, it extracts the elements from the DBSchema. This implies that the mapping activity uses the DBSchema directly and the process flow indirectly. The DBSchema further extracts information from the DBInfo. This implies that the DBSchema uses the DBInfo directly and the process flow indirectly. The DBInfo further locates the driver DBDriver1. This implies that the DBInfo uses the DBDriver1 directly and the process flow indirectly.

The Dependent Activities will display the process flow and a list of all activities that are directly related to the selected activity. In the above example, the related activities for DBDriver1 will display the process flow and DBInfo. The related activities for DBInfo will display the process flow and DBSchema. The related activities of DBSchema will further include the process flow and the mapping activity.

Steps to view Dependent Activities of an activity (for example Text Schema activity)

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** > **Schema** and then click **Text**. The **Manage Text Schema** screen is displayed (refer to Figure 658).

3. Select the activity row whose list of dependent activities you want to view.

4. Click the **More Actions** ☰ icon in the **Actions** column and then click **Dependencies** (see Figure 666).

Figure 666: More Actions menu options: Dependencies

This opens a screen that displays a list of activities directly and indirectly dependent on the selected activity. This screen has the following columns (see Figure 667):

- Name: Displays the name of the dependent activity.

- Description: Displays the description of the dependent activity.

- Revision: Displays the revision of the dependent activity, if the activity is version controlled.

- Activity Type: Displays the activity type of the dependent activity.

- Owner: Displays the name of the owner of the dependent activity.

- Project Name: Displays the project of the dependent activity.

- Modified: Displays when the dependent activity was last modified.

- Action: Provides you the option to edit, view, view the further dependencies the dependent activity.

Services > Schema > Text > DI_TargetSchema   ✕

Name	Description	Activity Type	Owner	Project Name	Modified	Action
Default_Data_Interfaces	This is the typical Get-Prc	Process Flow	diuser	Unassigned	04/16/11 17:53	☰

Figure 667: View Related Activities

5.   Close the screen to go to the **Manage Text Schema** screen.

> Related Activities cannot be viewed for Process Flows, WebDAV Folder and the Dashboard. It is also not displayed for the Users and Groups as all activities are dependent upon Users and Groups.

SETTING DEFAULT PERMISSION FOR ACTIVITIES

There are times when you want to set a default set of permissions for all the activities on the basis of the owner and the group of the owner. You can achieve the same by following the below steps.

Steps to set default permission for activities:

1.   On the Adeptia Suite homepage, click on the Administer tab.

2.   Click on **Setup → Application Settings → Update System Properties → Systems → Permission**.

3.   Change the value of the **abpm.activity.defaultPermission** property (see Figure 668).
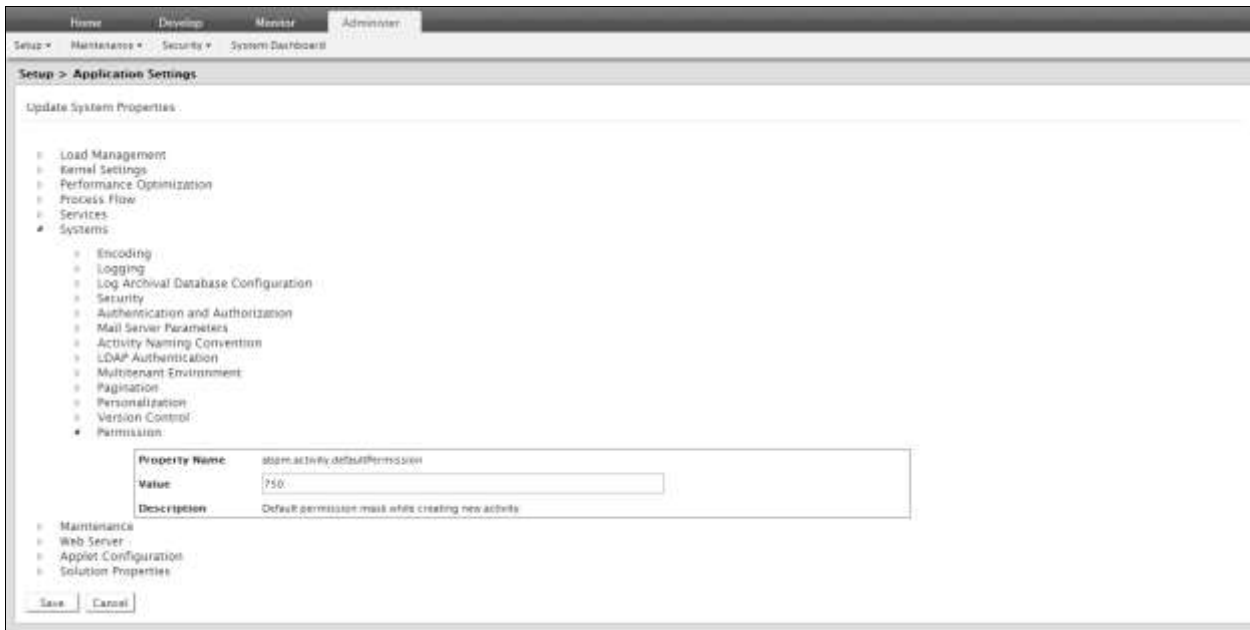
Figure 668: Permission Property

> ℹ️ The default value is **750**.
>
> For more information on permission and its possible values, please refer to the **abpm.activity.defaultPermission** property in the **Systems** section of the Administrator Guide.

4.   After changing the property, click on the **Save** button to save the changes.

5.   Click on the **Reload configuration** link.

CHANGING ADVANCED PROPERTIES OF AN ACTIVITY

Advanced properties of an activity show the name of the Owner, Creation Date, Last Modified Date, Modified By and Permissions.

The advanced properties vary from each activity. However, the process of changing advanced properties is similar for all activities. The process of changing the advanced properties of a Text schema is explained below.

To change the permission of an activity:

1.   On the Adeptia Suite homepage, click on the **Develop** tab.

2.   Go to **Services → Schema → Text**. This action will display you the *Manage Text Schema* screen (see Figure 669).
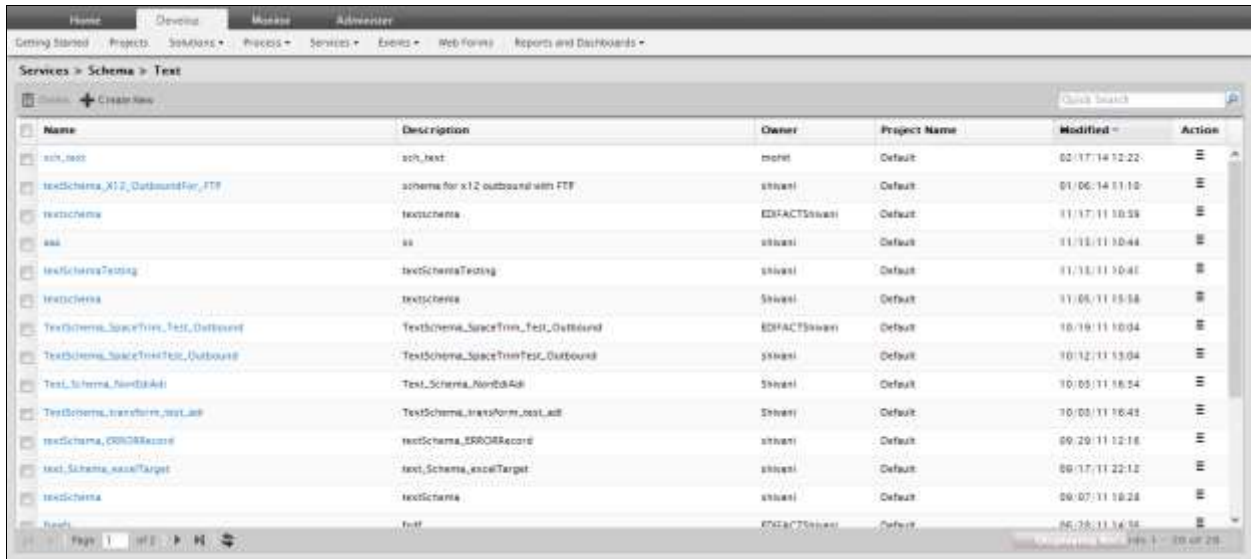
Figure 669: Manage Text Screen

3.   Click the activity that you want to edit. This action will display you the *Edit Text Schema* screen.
4.   To change the advance properties, click on the **Advanced Properties** section. This action will display you the advanced properties of Text schema (see Figure 670).
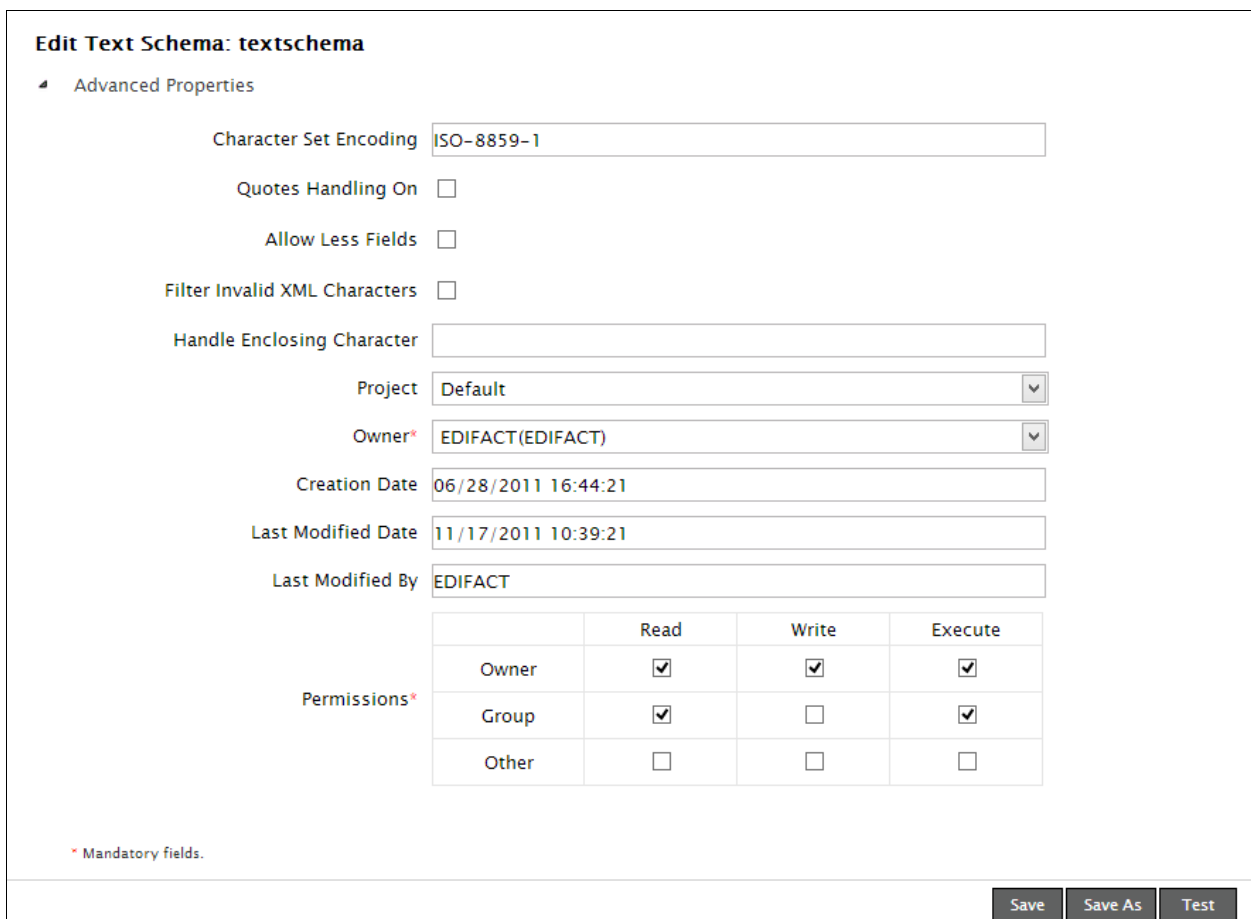
Figure 670: View Advanced Properties

5. To change the ownership of the activity, select the owner from the **Owner** dropdown list.

> A user can select another user within its group only as the owner of the activity.

6. The Creation Date, Last Modified Date and Last Modified By fields are non-editable. A user cannot change the values of these fields.

7. To change the permissions, check the required checkboxes beside Permissions according to the following tables.

Table 2: Owner Permissions

Permission	Owner
Read	Read permission allows the owner user to view the activity. The Read checkbox is pre-selected and cannot be deselected.
Write	Write permission allows the owner user to Edit the activity.
Execute	Execute permission allows the owner user to Execute the activity.

Table 3: Group Permissions

Permission	Group
Read	Read permission allows the other users of the owner's group to view the activity.
Write	Write permission allows the other users of the owner's group to Edit the activity.
Execute	Execute permission allows the other users of the owner's group to Execute the activity.

Table 4: Other Permissions

Permission	Other
Read	Read permission allows the users of the other group to view the activity.
Write	Write permission allows the users of the other group to Edit the activity.

Permission	Other
Execute	Execute permission allows the users of the other group to Execute the activity.

8. After changing the properties, click the **Save** button to save the changes.

USING VERSION CONTROL

In Adeptia Suite you create and maintain your objects within a group or project. Sometime you may have to modify the same objects multiple times. It is also possible that same object has been modified by more than one user at different point of time. So it becomes important to maintain the version as well as revision history of the objects. Without the revision history of the activity, you cannot find out which user has when and why made the respective change to the activity. Therefore, to avoid such circumstances, Adeptia Suite provides the ability to version control the objects.

This section explains how to version control the objects that you create within Adeptia Suite.

Versioning refers to the process of assigning unique version numbers to unique states of the activities and objects. These numbers are generally assigned in increasing order and correspond to new developments in a group or project. For example, if you create any activity and check-in that, it will automatically be assigned as version 1 and the activities created and checked-in after that will be assigned with very subsequent revisions, i.e. the activities will be saved as revision 2, 3, 4, and so on.

Versioning enables you to:

- Maintain unique versions of the changes done to a single activity.
- Check-in all objects of a group or Project to store them in version control system
- Perform check-in on individual activity to store them in the version control system.
- Maintain revision history as to know which user worked on which activity.
- Check-Out any version of individual activity to work on.

By default Versioning is disabled. To enable versioning of objects Adeptia uses **Apache Subversion (SVN)**, which is a software versioning and revision control system distributed under an open source license. To use versioning in Adeptia Suite, you need to install SVN and integrate it with Adeptia Suite.

In the Adeptia Suite this feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

This chapter describes the following tasks:

- Installing and Configuring Apache Sub Version
- Configuring Adeptia Suite For Version Control
- Sharing a project
- Sharing a group
- Check-In a Single Activity to SVN
- Replacing the current version with previous version

- [View Revision History of an activity](#)

INSTALLING AND CONFIGURING APACHE SUBVERSION

This section gives an overview about Installing and configuring Apache SVN system.

Installing Apache Subversion (SVN)

To download installer, refer to the website http://subversion.apache.org/packages.html.

Download svn installer from any of the distributor of your choice. Run the downloaded svn installer and complete the installation by referring to http://www.subversionary.org/howto/setting-up-a-server-on-windows.

CONFIGURING ADEPTIA SUITE FOR VERSION CONTROL

You can now configure Adeptia Suite in 3 ways to access SVN server. This section covers the steps that you need to follow to enable Versioning in Adeptia Suite and define the SVN parameters.

Pre-Requisites

You must login as *Admin* user to change the Adeptia Suite system properties.

Steps to configure Adeptia Suite for Versioning

1. On the Adeptia Suite home page, click on the **Administer** tab.

2. Go to **Setup** menu. This action will display you the menu options of the **Setup** menu.

3. Select the **Application Settings** option (see Figure 671).
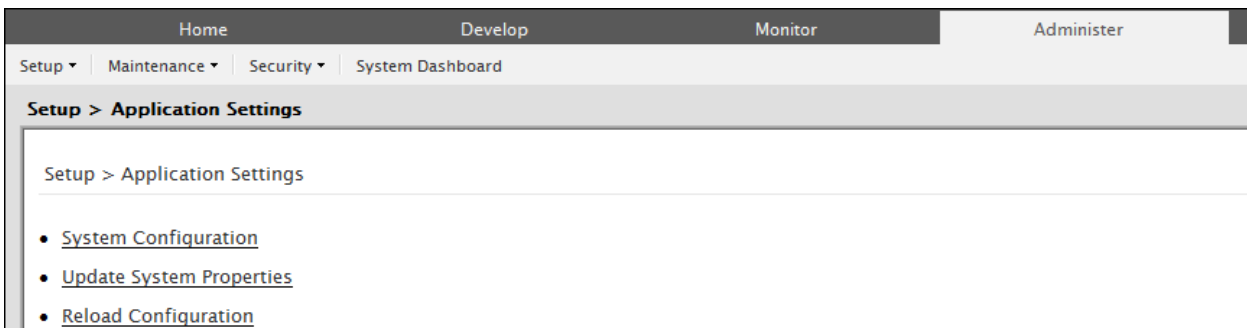
Figure 671: Application Settings

4. Click the **Update System Properties** option (see Figure 672).

Figure 672: Update System Properties

5.   Expand the **Systems** node (see Figure 673).
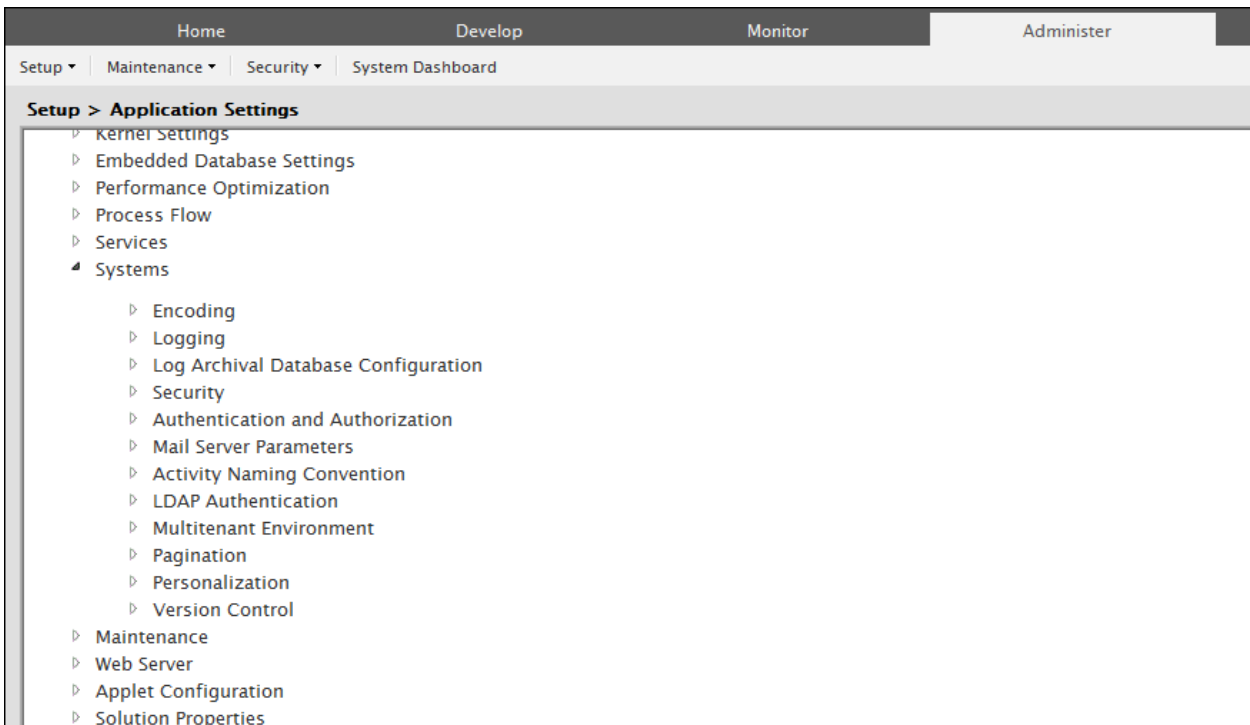
Figure 673: Application Settings: Systems

6. To enable versioning in the Adeptia Suite, expand the Version Control sub-node. This action will display you the properties to be set for Version Control (see Figure 674).

Figure 674: Version Control Properties

> ℹ The default value of the **abpm.versionControl.enable** property is **false.** To configure SVN and enable versioning in the Adeptia Suite, you need to enter values for all the **Version Control** properties.

7. Set the value of the **abpm.versionControl.enable** property to **true**.

8. You can set the value of the **abpm.versionControl.repository.access.protocol** property to either SVN, or HTTP, or HTTPS.

9. In the **abpm.versionControl.repository.url** property, enter the IP address of the SVN server. This action enables you to connect the SVN server with the Adeptia Suite by using the protocol mentioned in the previous step.

> ℹ You need to define the hostname or IP address of SVN server as per the syntax below:
> *<access protocol>://<hostname >:<port>*

where

<access protocol> is the protocol that you will select to access the SVN server. You access SVN server by using the following protocol: SVN, HTTP, and HTTPS.

<hostname> is the IP address of the SVN server.

<port> is the port at which SVN server is running. By default, the SVN server uses the 3690 port.

For example, if your SVN Server is on a host with 192.168.1.1 IP address and is using 3690 port then the URL will be:

svn://192.168.1.1:3690/

In case you have installed your SVN server on a Linux-based OS then you need to provide the absolute path of the SVN server according to the syntax:

<access protocol>://<hostname>:<SVN port><Absolute Path of the Repository including the Repository Name>

When you install SVN server, you are asked to create a repository. In this property you need to provide the path where you have created the repository.

For example, if the SVN Server is installed on a host with IP address 192.168.1.1 using the port 3690 and the path of the SVN Repository is /Adeptia/Version_Control_Repository, then you need to define then the URL will be:

svn://192.168.1.1:3690/Adeptia/Version_Control_Repository

10. In the **abpm.versionControl.username** property, enter the username that you want to use to access host repository.

11. In the **abpm.versionControl.password** property, enter the password of the username that you have mentioned in the previous steps.

12. In the **abpm.versionControl.projectPath** property, enter the path where you want to create the local copy of the SVN project,**.** This path must exist on the machine, where you have installed the Adeptia Suite.

> When you Check-In the activity of the Adeptia Suite for the first time, the Adeptia Suite creates a local copy of the project on the path that you have specified in the **abpm.versionControl.projectPath** property**.**
>
> At the same time the Adeptia Suite also creates a project with the same name as in the SVN.
>
> If you have installed the Adeptia Suite on a Windows-based OS then, you can either define the absolute path or the relative path with respect to ServerKernel folder. For example, you can define the absolute path as c:\Adpetia\AdeptiaVersionControl. It means that the local SVN project is created within c:\Adeptia\AdeptiaVersionControl folder.
>
> You can also define the relative path like **.\AdeptiaVersionControl**. In this case, the Adeptia Suite creates the local project within **ServerKernel > AdeptiaVersionControl** folder.
>
> The default value of the **abpm.versionControl.projectPath** property is

.\AdeptiaVersionControl.

You can provide the path other than the default path in the **abpm.versionControl.projectPath** property as per your requirement.

If you have installed the Adeptia Suite on a Linux-based OS then you must specify the absolute path for the Local Version Control Project.

For example /root/home/ADEPTIA/AdeptiaVersionControl/

Figure 675: Sample Configuration to Enable Versioning

13. Enter the Keystore path for client authentication in the **abpm.versionControl.keystore.path** property.

14. Enter the password of the Keystore for client authentication in the **abpm.versionControl.keystore.password** property.

> ℹ️ You need to enter the values in the **abpm.versionControl.keystore.path** and **abpm.versionControl.keystore.password** properties only when you use a HTTPS protocol on an SVN server which is client authenticated.

15. Click the **Save** button to save the new values.

16. Reload the settings to bring the changes into effect.

CHECK-IN A PROJECT

Once you configure SVN and enable versioning, you can check-in the project for which you want to apply versioning. This applies that all the activities of the checked project will be checked in the SVN repository. When you check in any project, all the activities of the project get the same version number. You can also Check-In any individual activity only, which is explained the later part of this section.

Steps to Check-in the Project

1. Log into the Adeptia Suite with the admin or with the User who is the owner of the project.

2. Click the **Developer** tab and then click **Projects** menu. All the projects are displayed (Figure 676).

Figure 676: Projects Manage page

3. On the *Manage Project* screen, click the **Actions** ≡ icon of project, which you want to check-in. The list of possible actions is displayed (see figure below).

   You can also right-click the project row to view the actions that you can perform on the selected project (Figure 677).
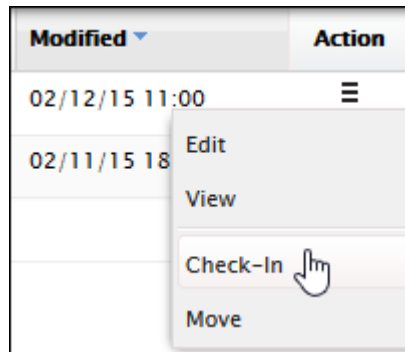
Figure 677: Actions menu on Project Manage page

4.   Click **Check-in** to share the project. A confirmation message is displayed (see Figure 678).
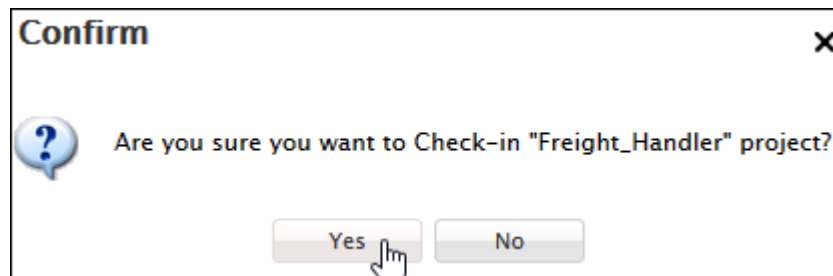
Figure 678: Application Message

5.   Click **Yes** to **Check-in** the project. Depending upon the number of activity, sharing may take few minutes. When all the activities of the selected projects is completed, a confirmation message is displayed (see Figure 679).
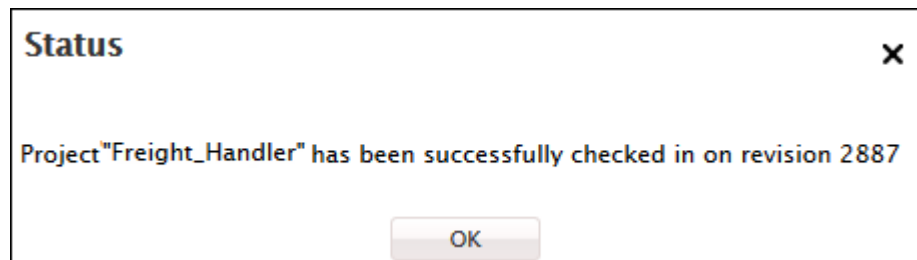
Figure 679: Status Application message

6.   Click **OK** to close this dialog box.

7.   Once the project is Checked, a version number is assigned to the activities of the Project and icon to depict synchronization status is also placed with activity name (see Figure 680).

Figure 680: File Event Manage page

The ✅ icon depicts that the activity has been check-in and in sync with the copy of this activity in SVN server.

> ℹ️ All the activities of a project which is checked are assigned with same revision number.
>
> A project can be checked-in any number of times.

CHECK-IN A GROUP

You can also check-in the group in similar to the way you have checked-in the project. This applies that all the activities of the Checked-in group will be checked in the SVN repository. When you check in any group, all the activities of the group get the same version number.

Steps to Check-in the Group

1. Log into the Adeptia Suite with the admin or with the User who is the owner of the group.

2. Click the **Administer** tab and then click **Group** menu. All the groups on which you have the access permission are displayed (see Figure 681).
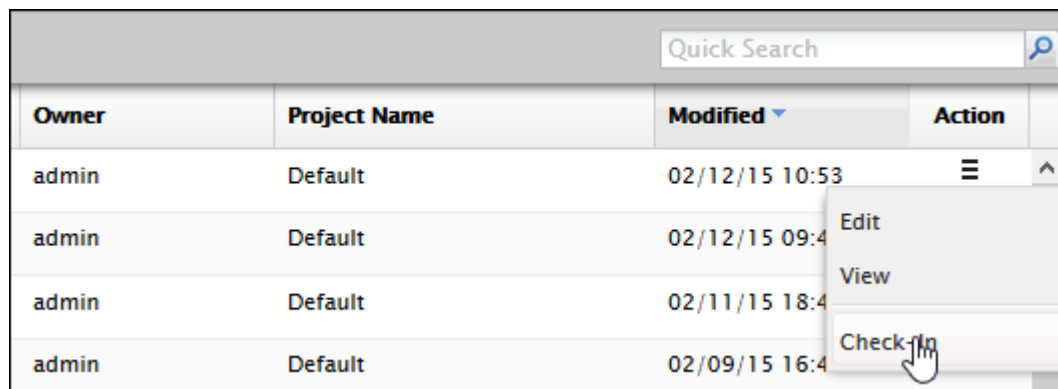
Figure 681: Projects Manage page

3. In the **Manage Group** screen, click the **Actions** ☰ icon of project, which you want to Check-in. The list of possible actions is displayed (see figure below).

    You can also right-click the project row to view the actions that you can perform on the selected project (see Figure 682).

Figure 682: Actions List

4.   Click **Check-in** to check-in the group. A confirmation message is displayed (see Figure 683).
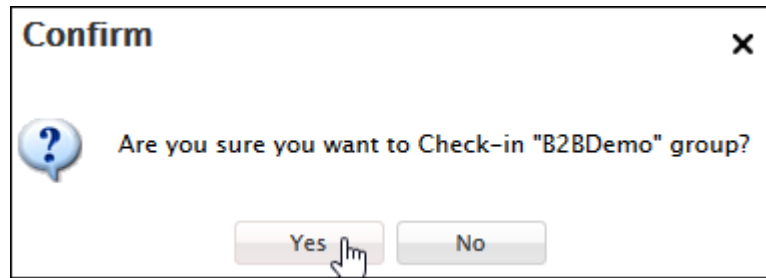
Figure 683: Confirmation Message

5.   Click **Yes** to check-in the project. Depending upon the number of activity, Checking-in may take few minutes. When all the activities of the selected projects is completed, a confirmation message is displayed (see Figure 684).
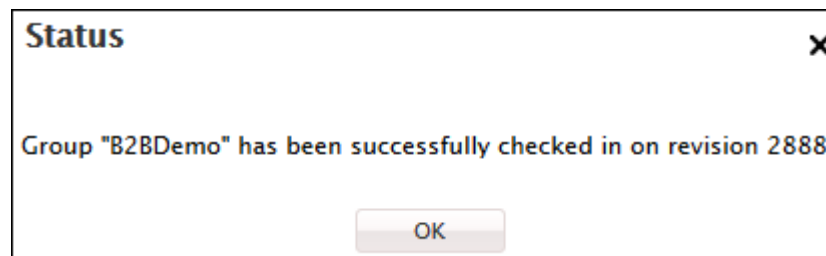
Figure 684: Status Message

6.   Click **OK** to close this dialog box.

7.   Once the Group is shares, a version number is assigned to the activities of the group and an icon to depict synchronization status is also placed with activity name (see Figure 685).

Figure 685: File Event Manage page

The [icon] icon depicts that the activity has been check-in and in sync with the copy of this activity in SVN server.

> All the activities of a project which is checked-in are assigned with same revision number.
>
> A project can be checked-in any number of times.

CHECK-IN A SINGLE ACTIVITY INTO SVN

To version control any activity you need to Check-In it. This ensures that the activity is being version controlled in SVN and you can Check-It out at any point of time in case you want to use this particular version of this activity. Whenever you do any modification in the activity, you can check-In the activity to make sure that the changes is being version controlled. After each check-In a version number is assigned to the activity.

This section explains how to check-in a single activity.

Steps to check-in the activity

1. To check in any activity, go the Manage Page of that activity. For example, if you want to check-in a File Event, go the File Event Manage Page (see Figure 686).

Figure 686: File Event Manage

As you can see in the above figure, two activities with icon ⊕ are new activities which are not checked in to SVN server.

Table below list all possible synchronization status and their respective icons to depict the synchronization status.

Icons	Description
⊞+	The activity is not added to Version control.
⊞⟳	The activity is in sync with the Version control system.
⊞+	The latest version of the activity has been modified and the latest modification has not been checked in to SVN server.
⊞⟳	Any of the previous versions of the activity has been check-out.
⊞+	Any of the previous versions has been checked out and then some modification has been done.
⊞+	Check out the selected revision.

2. Click the **Actions** ☰ icon of the activity, which you want to check-in. The list of possible actions is displayed (see Figure 687).
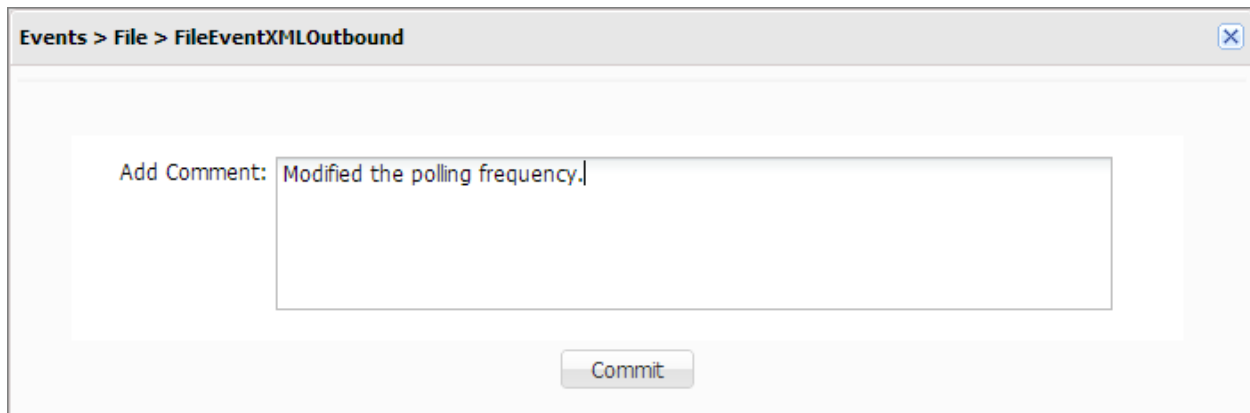
Figure 687: File Event Manage Page

3. Select the **Check-In** option. A dialog box is displayed to enter the comment. (Figure 688).

Figure 688: Add Comment box

> ℹ️ It is recommended to enter the proper comment when you check-in any activity. This helps you to understand why particular activity has been modified.

4. Enter the comment and click **Commit** to check-in the activity. A confirmation message is displayed that the activity has been checked-in successfully (see Figure 689).
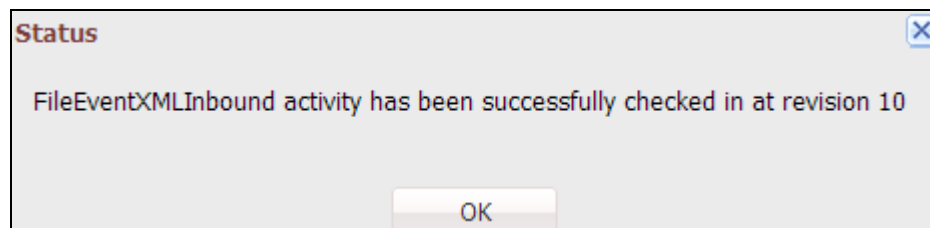
Figure 689: Application Message

5. Click **OK** to close this dialog box. Note that ➕ icon has been changed to 🔄 icon. This applies that this activity is in sync with the SVN repository.

6. If you attempt to check-in an already check-in activity, an application status message is displayed (Figure 690). This application message also displays the version number.
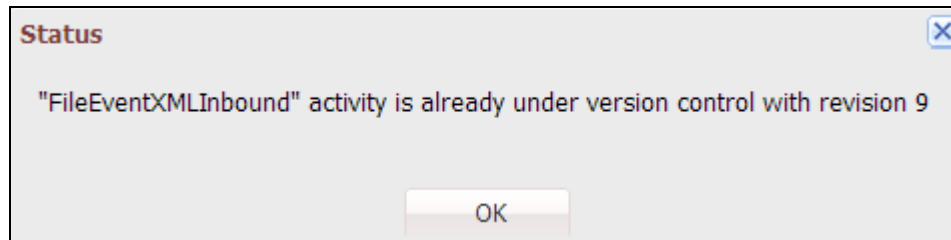
Figure 690: Application Message

REPLACING THE CURRENT VERSION WITH PREVIOUS VERSION

You can also replace the current version of the activity in Adeptia Suite with any of the previous versions of this activity which are stored in the SVN.

Steps to replace the current version of an activity with the previous version

1. On the activity **Manage Page,** Click the **Actions** ☰ icon of the activity, which you want to replace. The list of possible actions is displayed (see Figure 691).

Figure 691: File Event Manage Page

2. Select the **Replace With option**. The **Revisions** of the selected activity are displayed (see Figure 692).

Figure 692: Revisions Page

3. Click the Check-out icon of the revision, with which you want to replace the current version of the activity. A dialog box is displayed for your confirmation to replace the current version of activity with the select version (see figure below).
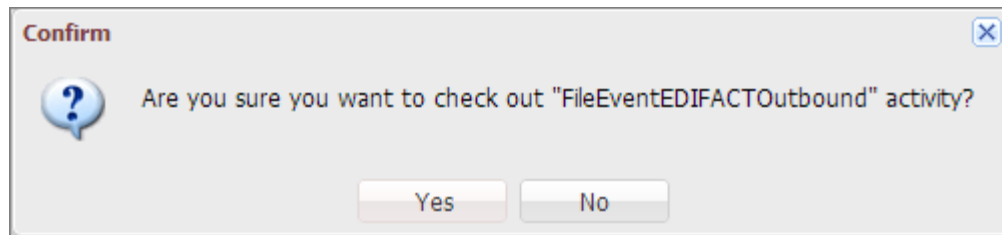
Figure 693: Confirmation Message

 If you have modified the activity within Adeptia Suite, which is not checked in to SVN, and replace this activity with previous version from SVN, then all the modification will be lost.

4. Click **Yes** to confirm that you want to check that activity. A message is displayed to confirm that the particular version of the activity has been checked out (see Figure 694).
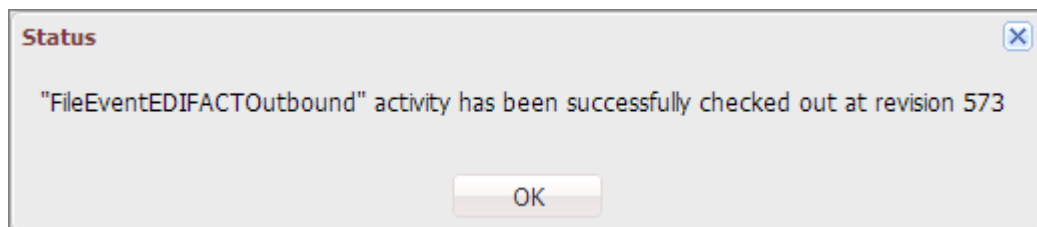
Figure 694: Confirmation Message

5. Click on to close this dialog box and return to Manage Page.

 You may notice that on the **File Event Manage** page, icon has been changed to icon. It depicts that this the is not the latest version of the activty, which is commited into SVN. You may now work on the checked-out previous revision and can check-in after modification as your current version. The icon will be changed to icon.
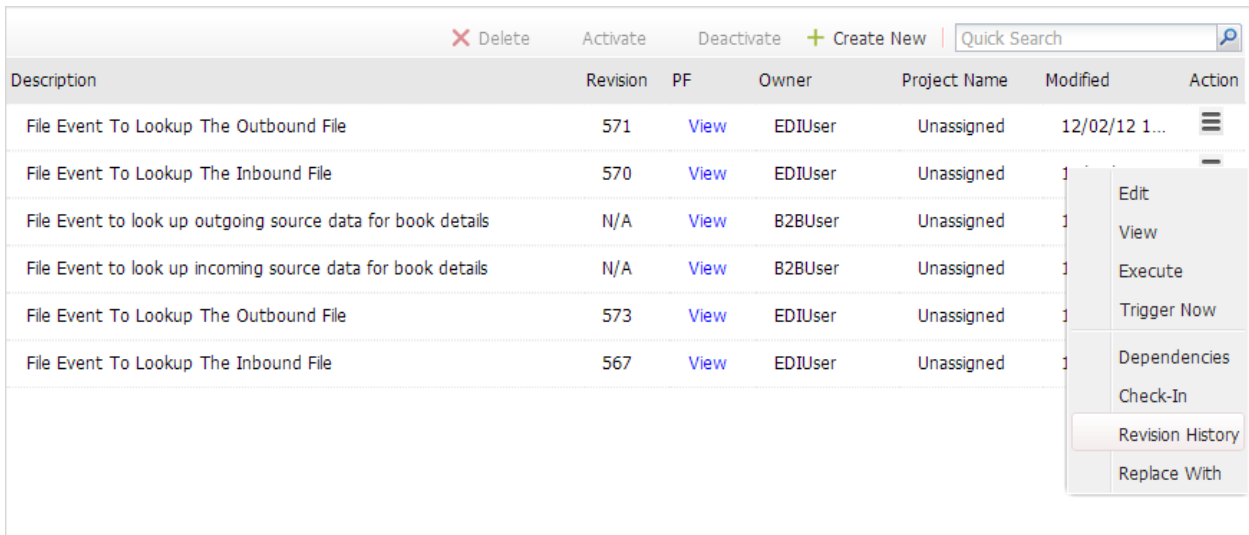
VIEWING REVISION HISTORY OF AN ACTIVITY

If you have version controlled any activity, you can also view its revision history. In revision history you can see, how many times a particular activity has been checked in and the details of each revision. In revision history, following details of each revision are displayed.

17. **Revision**: Displays the version number of the e activity

18. **Date/Time**: Displays the date and time when the activity has been checked in to SVN server.

19. **User Name**: Displays the name of the user who checked-in the activity

20. **Comment**: Displays the comment that the user has provided while check-in the activity

Steps to view revision history of an activity

1. On the activity **Manage Page,** Click the **Actions** ☰ icon of the activity, which you want to replace. The list of possible actions is displayed (see Figure 695).

Figure 695: List of Actions

2. Click **Revision History** to view the all revisions of the selected activity (see Figure 696).

Figure 696: Revision History

CREATING EVENTS AND TRIGGERS

Trigger Events are used to schedule and trigger a process flow. Trigger Events enable you to specify when and how frequently the process flow should be executed on a recurring basis. The types of trigger events are outlined as:

- Calendar Event
- Complex Event
- Database Event
- Event Registry
- File Event
- FTP Event
- HTTP Trigger
- JMS Event
- Mail Event
- Timer Event
- Web Service Trigger

By default, a trigger event remains deactivated after its creation. To trigger a process flow using the trigger events, you must bind it with appropriate trigger events and then activate those events.

CREATING CALENDAR EVENT

This service enables you to specify the recurring execution of process flow between the specified dates in conjunction with a specified calendar.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a Calendar Event

1. On the Adeptia Suite homepage menu, click the **Develop** tab.

2. Go to **Events > Calendar**.

   The **Manage Calendar Event** screen is displayed (see Figure 697).

Figure 697: Manage Calendar Event

3.   Click the **Create New** link. The *Create Calendar Event* screen is displayed.

4.   Enter the name and description of the new Calendar Event activity in the textboxes **Name** and **Description** respectively.

5.   Enter the date from which Calendar event will start triggering; in the textbox **Event Start Date** field. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon to select the required date from the calendar.

6.   Enter the start time from the dropdown list **Time** dropdown list.

7.   Enter the date on which Calendar event will stop triggering, in the **Event Expiry Date** field. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon and select the required date from the calendar.

8.   Enter the expiry time from the **Time** dropdown list.

9.   Select the days of week on which the event should fire from the dropdown list **Firing Days**.

Types of firing days are described in the table below.

Table 1: Types of Firing Days

Days	Description
All Days	The event will fire on all days (Mon to Sun) of the week.
Business Days	The event will fire from Monday to Friday excluding holidays. To know how to specify holidays, refer to the *Business Calendar* section of *Appendix A* in *Administrator Guide*.
Week Days	The event will fire from Monday to Friday even if there are any holidays.

10.   Define the frequency of execution in the **Firing Schedule** fields (see Figure 698)

Figure 698: Create Calendar Event

> **i** For more details about Firing Schedule, click **Help** or refer to *Appendix B: Cron Expression* in *Administrator Guide*.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.
>
> If you want to learn about event misfire handling then, please refer to the Handling Misfire Event section.
>
> To enable email error notification, please refer to the Creating Email Error Notification section.

11. Click the **Save** button.

> **i** You can view details of a process flow associated with a calendar event, by clicking the process flow displayed under *Associated Process Flows* on the Manage Calendar Event screen.

CREATING COMPLEX EVENT

The Complex Event enables you to write java code to trigger the process flow. Using complex event, you can:

- Write you Java Logic to trigger a process flow
- Specify a process flow to be triggered

- Set context Variable of the process flow

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to create a Complex Event

1. On the Adeptia Suite homepage menu, click the **Develop** tab.

2. Go to **Events > Complex Event**.

   The *Manage Complex Event* screen is displayed (see Figure 701).

Figure 699: Manage Complex Event

3. Click the Create New link. The **Create Complex Event** screen is displayed (see Figure 700).

Figure 700: Create Complex Event

4. Enter the name and description of the new Complex Event activity in the textboxes **Name** and **Description** fields respectively.

5. Write the java code in the textbox **Script**.

> ℹ️ To view the sample code, click *Help* link displayed in the above figure.

6. Enter the date on which Complex event will stop triggering, in the **Event Expiry Date** field. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon and select the required date from the calendar.

7. Enter the expiry time from the **Time** dropdown lists.

8. Enter the time interval, the Complex event checks the database Server in the **Polling Frequency** field. Enter the digit in the Frequency field and select the unit of time i.e. seconds, minutes or hours etc. from the **Duration** dropdown list.

> ℹ️ Recommended minimum Polling Frequency is 30 seconds.
>
> To learn about Advanced Properties refer to [Changing Advanced Properties](#) section.
>
> If you want to learn about event misfire handling then, please refer to the [Handling Misfire Event](#) section.
>
> To enable email error notification, please refer to the [Creating Email Error Notification](#) section.

9. Click the **Save** button.

CREATING DATABASE EVENT

The Database Event enables you to schedule a process flow to be triggered when a record is inserted, updated or deleted in a database table.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Prerequisites

- Database *Info* activity must be created before creating *Database Event* activity.

Steps to create a Database Event

1. On the Adeptia Suite homepage menu, click the **Develop** tab.

2. Go to **Events > Database**.

    The *Manage Database Event* screen is displayed (see Figure 701).

Figure 701: Manage Database Event

3.   Click the **Create New** link. The **Create Database Event** screen is displayed.

4.   Enter the name and description of the new Database Event activity in the textboxes **Name** and **Description** fields respectively.

5.   Select the Database Info Id activity from the dropdown list **Database Info**.

> To learn how to create Database Info activity, refer to the Creating Database Info section.

6.   You can create the database event definition by entering an SQL Query or a database trigger command. By default, *SQL Query* option is selected. Enter the query in the *SQL Query* field. For example:

```
select * from PurchaseOrder where processingStatus='Ready'
```

> Here:
>
> *processingStatus* is a field in the source database table, which stores the status of the records. For example: If any record is already processed or not. This is important to make sure that same record should not be processed again and again.
>
> You can use any existing field for this purpose or you can add an additional field.
>
> In the above example, only those records, whose *processingStatus* is *Ready*, are picked for processing.

7.   Select the Trigger for all checkbox if you want to trigger this event for all the records in the selected database (see Figure 702).

Figure 702: Create Database Event

8.   Select the **Check Condition** checkbox, if you want to trigger the process flow based on a condition. The result of the query will be compared with a conditional value, and the process flow will be triggered, if the values matches. Select the operator for the query from the **Operator** dropdown list. Enter the value to be compared in the query in the **Conditional Value** field. The query should return only one record. If the query returns multiple records, then only the first record is accepted. If the query returns one record, then it will compare the value of the first field with the value specified in the **Conditional Value** field. If the value matches, then the process flow is triggered. If the value does not match, then the system simply logs an error. It does not trigger the process flow (see figure below).

> **i** If the **Check Condition** checkbox is not selected then the process flow is triggered each time a row is returned.
>
> In case **Trigger for All Record** checkbox is selected, then for all the records, only one process flow is triggered and it processes all the records.

9. In case you want to update the records, which are picked by event for processing, enable the **Execute Update Query** option and enter the update query in the **Update Query** field. For example:

```
update PurchaseOrder set processingStatus='%%Pass%%'
```

> **i** The update query is executed for each record picked up based on select query in previous step. Database Event execute update immediately after picking up the record to update the column storing the status of the record. This ensures the records are not picked up again.
>
> For example in the query given above, the *processingStatus* will be updated to **Pass**.

10. Enter the where condition. For example :

where id='%%id%%'

> **i** Where condition is used with Update Query in previous step to update only those records that satisfies this where condition.
>
> It can be any column or set of columns that make the record unique.
>
> In the above example *id* is a column in the database which uniquely identifies the records and

%%id%% is value of this column in the selected record.

11. Alternately, enter the database trigger command in the **SQL Trigger** field.

> Following is the format of trigger used to trigger the process flow:
>
> <Trigger Text>
>   INSERT INTO dbeventtriggertable VALUES ('Query =<WHERE CLAUSE>');
>   END <trigger name> ;
>
> Edit the parts, which are within < >. You can define a 'Where' clause that indicates the row that is updated. When the command is parsed, it will return the updated row from the database source.
> Do not delete the Insert query.
>
> <trigger name> after the END tag should be used for Oracle only. In case of SQL server, <trigger name> is not needed.
>
> Following is the example of the trigger used for SQL Server :
>
> create trigger Trigger_test on emp for
> insert,update
> as
> declare @empname varchar(20)
> begin
> set @empname=(select empname from inserted);
> INSERT INTO dbeventtriggertable VALUES ('Query =WHERE empname='''
> +@empname+'''');
>
> END ;
> Following is the example of the trigger used for Oracle:
> CREATE OR REPLACE TRIGGER Trigger_test
> AFTER INSERT OR UPDATE ONEmp FOR EACH ROW BEGIN INSERT INTO dbeventtriggertable VALUES ('Query = where rowid=||:new.rowid); END Trigger_test;
>
> Here:
>
> *Trigger_test* is name of the trigger.
> *Emp* is the name of the user table on which insert or update operation has to be done.
> *dbeventtriggertable* is the name of the temporary table used. Do not change it.

12. Enter the name of Trigger in the **SQL Trigger Name** field.

13. Enter the date from which Database event will start triggering; in the **Event Start Date** field. The date must be in *MM/dd/yyyy* format. Click calendar icon and select the required date from the calendar.

14. Enter the start time from the **Time** dropdown list.

15. Enter the date on which Database event will stop triggering, in the **Event Expiry Date** field. The date must be in *MM/dd/yyyy* format. Click the calendar icon and select the required date from the calendar.

16. Enter the expiry time from the **Time** dropdown list.

17. Enter the time interval, the database event checks the database Server in the **Polling Frequency** field. Enter the digit in the Frequency field and select the unit of time i.e. seconds, minutes or hours etc from the **Duration** dropdown list (see Figure 703).

Figure 703: Create Database Event

> Recommended minimum Polling Frequency is 30 seconds.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.
>
> If you want to learn about event misfire handling then, please refer to the Handling Misfire Event section.
>
> To enable email error notification, please refer to the Creating Email Error Notification section.

18. Click the **Save** button.

> You can view details of a process flow associated with a database event, by clicking the process flow displayed under *Associated Process Flows* on the *Manage Database Event* screen.

CREATING EVENT REGISTRY

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to Register a Process Flow with a Trigger Event

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Events > Event Registry**.

   The *Manage Event Registry* screen is displayed (see Figure 704).

Figure 704: Manage Event Registry

3. Click the **Create New** link. The **Create Event Registry** screen is displayed

4. Enter the name and description of the new Event Registry activity in the textboxes **Name** and **Description** respectively.

5. Select the required Events activity.

> To learn how to create event activity, refer to Creating Trigger and Events section.

6. To select an existing event activity, select the **Use Existing** radio button and select the event activity from the dropdown list.

7. To create a new event activity, select the **Create New** radio button, select the event type from the dropdown list and then click **Create Event** button. This displays the selected **Create Event** screen.

8. Enter the required parameters and click **Save** in the ***Create Event*** screen to save the event activity and return to **Create Event Registry** screen.

9. Select the required Trigger Event from the dropdown list **Event Name**.

10. Select the required process flow from the dropdown list **Process Flow Name** (see Figure 705).

Figure 705: Create Event Registry

> ℹ️ To learn about Advanced Properties refer to section Changing Advanced Properties section.
>
> If you want to learn about event misfire handling then, please refer to the Handling Misfire Event section.
>
> To enable email error notification, please refer to the Creating Email Error Notification section.

11. Click the **Save** button.

CREATING FILE EVENT

The File Event enables you to specify when and how frequently a process flow should be executed based on either creation of a new file, or existence of a file(s) in a pre-defined location or upon its modification.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a File Event

1. On the Adeptia Suite homepage menu, click the **Develop** tab.

2. Go to **Events > File**.

   The *Manage File Event* screen is displayed (see Figure 706).
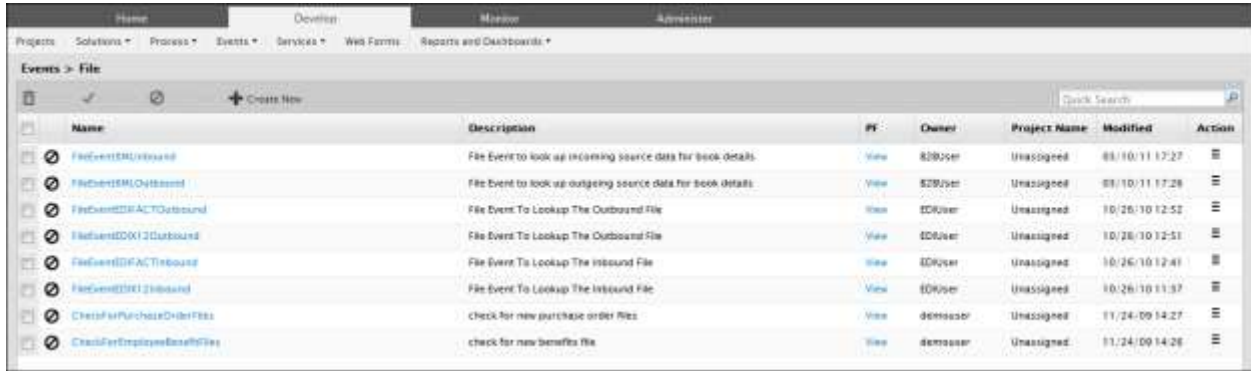
Figure 706: Manage File Event

3. Click the **Create New** link. The *Create File Event* screen is displayed.

4. Enter the name and the description of the new File Event activity in the textboxes **Name** and **Description** respectively.

5. Select the trigger type from the dropdown list **Trigger Type**. The effect on the selection is listed in the table below.

Table 2: Trigger Type Selection Values

Trigger Type Selection	Description
On FileCreated	To configure the file event to check for the creation of a new file(s).
In case a file is being created and after that it is being modified, then you need to enable the *Check for File Modification* option. This option is only used with *On File Created* option. In case a file is already processed by FileEvent and after that it is being modified then the FileEvent will again trigger the process for this file.	
On FileExists	To configure the file event to check for the existence of the file(s).
On FileModified	To configure the file event to check for any modification in file(s).

6. Enter the file name that the file event needs to verify in the textbox **File Include Criteria**.

7. Enter the name of file that file event does not need to verify, in the textbox **File Exclude Criteria**. For example **.txt* is entered in *File Include Criteria*, but two files *Gdata.txt* and *Gdata1.txt* file are not required to be verified by File Event. Then *Gdata.txt* and *Gdata1.txt* file name need to be entered separated by comma in the textbox

File Exclude Criteria. To specify more than one file in *File Include Criteria* and *File Exclude Criteria*, you can use regular expressions listed in the table below.

Table 3: Expressions used in File Include Criteria and File Exclude Criteria

Expression	Description
.	For all files with some extension
*	For all files in a directory
a*.txt	For files starting with a and having extension txt (e.g. arch.txt)
a??????.txt	For files starting with a and have 6 more character followed by txt extension (e.g. archive.txt)
a[1-9]	For a1, a2 ,a3 …………..a9
b[aiu]t	For bat, bit or but
a.txt, a.doc	For two files named as a.txt and a.doc

> **i** If more than one file is specified in the *File Include Criteria* field, process flow will triggered for each file.

8. Enter the path of file in the textbox **File Base Location**. Example c:/Gmdata

> **i** You can also use regular expression for folders, in *File Include Criteria* and *File Exclude Criteria* field. For example, if you enter *h*/*.txt* in *File Include Criteria* field and *C:/Gmdata* in *File Base Location* field, it will search for all .txt file inside all directories which starts from h under C:\Gmdata.

9. When Adeptia Server is installed on Windows Operating System, File Event uses windows service to connect to remote machine to access any file. It just connects once and uses the same connection with the same User ID and Password (which is stored in the cache) every time. If you want to enforce the validation of User ID and Password every time while accessing the file on a remote machine, select the **Use VFS** checkbox.

10. If the File Event is secured i.e. username and password are required to access it, then select the **Secure** checkbox and enter the username and password required to access the file in the textboxes **User ID** and **Password** respectively. This option is applicable only when the file specified is located on a remote machine (see Figure 707).

Figure 707: Create File Event

11. Enter the date from which file event will start triggering, in the **Event Start Date** field. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon and select the required date from the calendar.

12. Enter the start time from the dropdown list **Time**.

13. Enter the date on which file event will stop triggering in the textbox *Event Expiry Date*. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon and select the required date from the calendar.

14. Enter the expiry time from the dropdown list **Time**.

15. Select the type of trigger that you want to from the new drop-down list **Trigger**. This drop-down list has the following two options:

    - Simple
    - Cron

    By default, the option **Simple** is selected. This option triggers the File Event as per the defined polling frequency.

16. Enter the time interval for which file event will check for the arrival of any file or upon modification of existing file in the **Polling Frequency** field. Enter the digit in the **Frequency** field and select the unit of time i.e. seconds, minutes or hours etc from the **Duration** dropdown list.

    > Recommended minimum Polling Frequency is 30 seconds.

17. Select the option **Cron** new drop-down list **Trigger** if you want to trigger the File Event on the basis of Firing Days and as per the Firing Schedule. When you select the option **Cron**, the following two fields are enabled:

    - Firing Days
    - Firing Schedule

18. Select the days of week on which the event should fire from the dropdown list **Firing Days**.

Types of firing days are described in the table below.

Table 4: Types of Firing Days
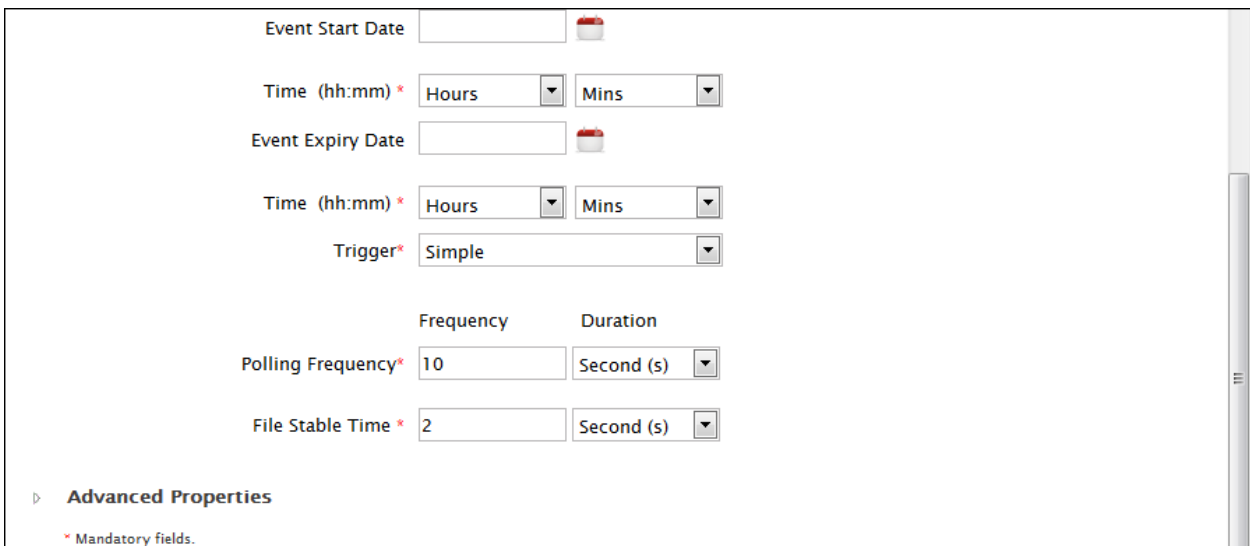
Days	Description
All Days	The event will fire on all days (Mon to Sun) of the week.
Business Days	The event will fire from Monday to Friday excluding holidays. To know how to specify holidays, refer to the *Business Calendar* section of *Appendix A* in *Administrator Guide*.
Week Days	The event will fire from Monday to Friday even if there are any holidays.

19. Define the frequency of execution in the **Firing Schedule** fields.

> **i** For more details on how to define trigger schedule, click **Help** or refer to *Appendix B: Cron Expression* in *Administrator Guide*.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.

20. Enter the file stable time in the textbox and select the duration from the drop-down list corresponding to field **File Stable Time**. This is applicable when user selects either *On FileCreated* or *On FileModified* from the drop-down list **Trigger Type**. Trigger will wait for the specified time for the file to become stable (see Figure 708).

Figure 708: Create File Event

> **i** To learn about Advanced Properties refer to Changing Advanced Properties section.
>
> If you want to learn about event misfire handling then, please refer to the Handling Misfire Event section.

> To enable email error notification, please refer to the [Creating Email Error Notification](#) section.

21. Click the **Save** button.

> ℹ️ You can view details of a process flow associated with a file event, by clicking the process flow displayed under *Associated Process Flows* on the **Manage File Event** screen.

CREATING FTP EVENT

The FTP Event enables you to specify when and how frequently a process flow should be executed based on either creation of a new file, or existence of a file(s) on a FTP Server or upon its modification.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a FTP Event

1. On the Adeptia Suite homepage menu, click the **Develop** tab.

2. Go to **Events > FTP**.

    The *Mange FTP Event* screen is displayed (see Figure 709).

Figure 709: Manage FTP Event

3. Click the Create New link. The **Create FTP Event** screen is displayed.

4. Enter the name and description of the new FTP Event in the textboxes **Name** and **Description** fields respectively.

5. Enter the name and port number of the FTP Server in the textboxes **Host Name** and **Port** fields respectively.

6. Enter username and password required to access FTP Server in the textboxes **User ID** and **Password** fields respectively. Then, re-enter the password in the textbox **Confirm Password** field.

7. Select the transfer type as either **Active** or **Passive** from the dropdown list **Transfer Type**. Active transfer is more secure since the client only initiates communication to the server on one port whereas in case of Passive transfer the client initiates communication to the Server over two ports. Passive mode is useful when you are behind a firewall or a proxy.

8. Select the trigger type from the dropdown list **Trigger Type**. For details of the selection, refer to Table 2.

9. Select the **SSH FTP (SFTP)** checkbox if the FTP Server specified in the dropdown list **Host Name** field is an FTP Server over SSH.

10. Select the **FTPS** checkbox, if the FTP Server, specified in the *Host Name* field is an FTP Server over TLS/SSL (see Figure 710).

New FTP Event

◢ Standard Properties

Name*	
Description*	
Host name*	
Port*	21
User Id*	
Password	
Confirm Password	
Transfer Type*	PASSIVE
Trigger Type*	On FileCreated
SFTP*	☐
Key Manager	None
FTPS*	☐
FTPS Mode	Explicit
Protection Level	None
Validate Server	☐
Keystore Name	-- SELECT --
File Include Criteria*	Define List
File Exclude Criteria	
File Base Location*	
Event Start Date	
Time (hh:mm) *	Hours Mins
Event Expiry Date	
Time (hh:mm) *	Hours Mins
Trigger*	Simple

	Frequency	Duration
Polling Frequency*		Select One
File Stable Time*		Select One

▷ Advanced Properties

* Mandatory fields.

Save

Figure 710: Create FTP Event

11. In case you have selected **FTPS** checkbox, then select the FTPS mode from the dropdown list **FTPS Mode**. It can be *Explicit* or *Implicit* depending on FTP Server that you are accessing.

12. Select the protection level supported by the FTP Server, from the dropdown list **Protection Level**. This drop-down list has the following three options:

- None
- Clear
- Private

By default, the option **None** is selected.

13. If you want to validate the certificate sent by the FTPS Server, select the **Validate Server** checkbox.

14. Select keystore activity from the dropdown list **Keystore Name**. This option is applicable only when you have selected the **Validate Server** checkbox.

> When **Validate** option is deselected, it always accepts the certificate sent by FTPS Server.
>
> When this option is checked, it validates the certificate sent by FTPS server against the certificate imported in Keystore.
>
> Keystore is repository of security certificates.
>
> To know how to create Keystore and import certificates, refer to *Creating Keystore* section of *Administrator Guide*.

15. Enter the name of file that FTP event needs to verify, in the **File Include Criteria** field.

> In File Include Criteria and File Exclude Criteria you can also give the folder name along with the file name. For example suppose you have entered C:\Gmdata in File Base Location field. There are two sub-folders Purchase and Purchase1in Gmdata folder. Now suppose you don't know whether the file is in Purchase or Purchase1 folder. To handle this scenario you can define File Include Criteria as defined below:
>
> Purchase/*.txt,Purchase1/*.txt.
>
> You can also use regular expression in the folder name as given below:
>
> Pur*/*.txt
>
> This path includes both the folder *Purchase* and *Purchase1*.
>
> If you have large number of paths that need to be define, you can also use *Define List* option.

16. To define path in **File Include Criteria***,* click **Define List** button. The **File Include Criteria List** screen is displayed (see Figure 711).

Figure 711: Add Include Criteria List

17. To add path enter the path in the textbox **File Include Criteria** and click the **Add to List** button. The added path are shown in **File Include Criteria** *List*.

18. Click the **Save** button to save the added path in the textbox **File Include Criteria**. The added paths are populated in the textbox **File Include Criteria** in the **Create FTP Event** page.

> If you want to remove some path form the *File Include Criteria,* select the checkbox adjacent to the required path and then click **Save**. The selected path is not populated in the *File Include Criteria* field of the *Create FTP Event* page.

19. Enter the name of file that file event does not need to verify, in the *File Exclude Criteria* field. For example **.txt* is entered in *File Include Criteria*, but two files *Gdata.txt* and *Gdata1.txt* file are not required to be verified by FTP Event. Then *Gdata.txt* and *Gdata1.txt* file name need to be entered separated by comma in *File Exclude Criteria* field. To specify more than one file in *File Include Criteria* and *File Exclude Criteria*, you can also use regular expressions. These are listed in Table 3.

> If more than one file is specified in the *File Include Criteria* field, process flow will triggered for each file.

20. Enter the path of file in the textbox **File Base Location**. Example c:/Gmdata.

21. Enter the date from which FTP event will start triggering in the textbox **Event Start Date** field. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon and select the required date from the calendar.

22. Enter the start time from the dropdown lists **Time**.

23. Enter the date on which FTP event will stop triggering, in the **Event Expiry Date** field. The date must be in *MM/dd/yyyy* format. Click the calendar icon and select the required date from the calendar.

24. Enter the expiry time from the dropdown list **Time**.

25. Enter the time interval for which FTP event will check for the arrival of any file or modification of existing file in the **Polling Frequency** field. Enter the digit in the Frequency field and select the unit of time i.e. seconds, minutes or hours etc from the **Duration** dropdown list.

> Recommended minimum Polling Frequency is 30 seconds.

26. Enter the file stable time in the textbox and select the duration from the drop-down list corresponding to field **File Stable Time**. This is applicable when user selects either *On FileCreated* or *On FileModified* from the drop-down list **Trigger Type**. Trigger will wait for the specified time for the file to become stable.

27. Click on the **Advanced Properties** section to view the advance properties of the FTP Event (see Figure 712).

Figure 712: Advanced Properties (FTP Event)

28. If you want to receive error mails related to this FTP event then enter the email id in the **Notification Receiver Email-ID(s) (comma separated)** text box.

29. If you want to trigger the associated process flow in a sequential manner then check the **Trigger in Sequence** checkbox. If you do not check the **Trigger in Sequence** checkbox then, the associated process flow will trigger concurrently.

> To learn about Advanced Properties refer to Changing Advanced Properties section.
>
> If you want to learn about event misfire handling then, please refer to the Handling Misfire Event section.
>
> To enable email error notification, please refer to the Creating Email Error Notification section.

30. The **Connector** dropdown lists the APIs that you can use to connect to the FTP Server.

    For any new activity, by default Secured Inet Factory option is selected in this dropdown list.

    The options of the **Connector** drop-down list changes as per your selection of the protocols that you want to use to establish the FTP connection. Please see the below table for more information:

Protocol	Options
FTP	Native Secured Inet Factory
SFTP	J2SCH (VFS) Secured Inet Factory J2SSH
FTPS	J2SCH (VFS) Secured Inet Factory

31. If you want to create a log file of your FTP activity then check the **Verbose** checkbox.

    > The **Verbose** checkbox is enabled only when you select the **Secure Inet Factory** option from the **Connector** drop-down list. When you enable the **Verbose** checkbox, the log file is created within `<Adeptia Suite Installation folder>\AdeptiaServer\ServerKernel\Logs\Ftplogs` folder. Whenever you execute this activity a separate log file is created with the name `<ActivityName_MM-dd-yyyy hh-mm-ss.S>`.
    >
    > Here:
    >
    > *ActivityName* is the name of the FTP Activity for which log file is created.

32. A new dropdown list **Secured FTP Connector** has been added. This dropdown lists the API which is used to connect to the FTP Server. It has the following options:

    - J2SCH (VFS)
    - J2SSH

    By default, the option **J2SCH (VFS)** is selected in this dropdown list (see Figure 712).

    > In case FTP Event is not able to connect to the FTP Server which you have specified in the **HostName** field, you can select the FTP Server **J2SSH**.
    >
    > However, this option is available only if you are connecting to a SFTP Server and when the checkbox **SSH FTP (SFTP)** is selected.

33. Click the **Save** button.

> You can view details of a process flow associated with a FTP event, by clicking the process flow displayed under *Associated Process Flows* on the Manage FTP Event screen.

CREATING HTTP EVENT

The HTTP event enables you to schedule a process flow to be triggered when an HTTP request is made to Adeptia Server. It also allows the request to pass the data to the process flow. The trigger can be used by a HTTP client application to integrate with process flow, deployed on the Adeptia Server.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a HTTP Event

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Events > HTTP**.

    The *Manage HTTP Event* screen is displayed (see Figure 713).

Figure 713: Manage HTTP Trigger

3. Click the **Create New** link. The *Create HTTP Event* screen is displayed.

4. Enter the name and description of the new HTTP Trigger activity in the textboxes **Name** and **Description** respectively (see Figure 714).
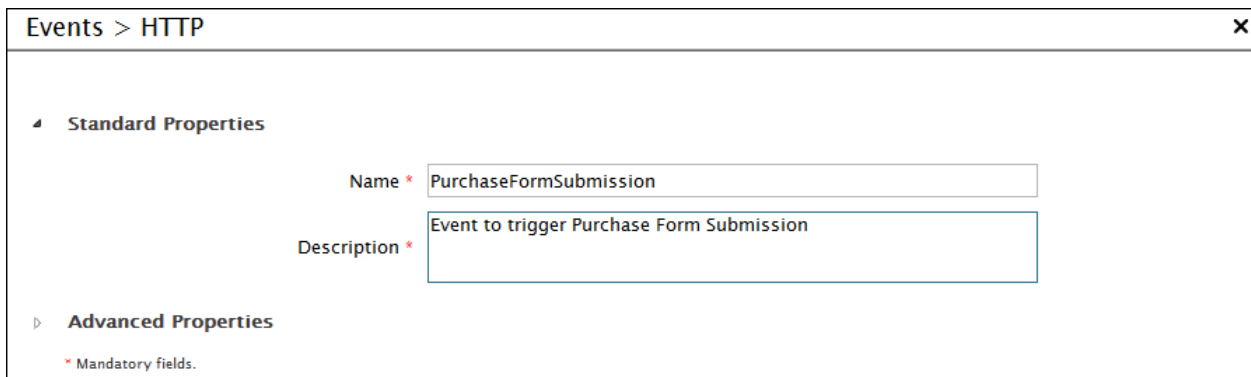
Figure 714: Create Http Trigger

> ℹ️ To learn about Advanced Properties refer to Changing Advanced Properties section.
>
> If you want to learn about event misfire handling then, please refer to the Handling Misfire Event section.
>
> To enable email error notification, please refer to the Creating Email Error Notification section.

5.   Click the **Save** button.

> ℹ️ You can view details of a process flow associated with a HTTP event, by clicking the process flow displayed under *Associated Process Flows* on the Manage HTTP Event screen.

Usage Recommendation

To read the context variable, within a process flow following steps are required:

1.   While creating the process flow, create a process flow variable. To know, how to create Process Flow Variable, refer to the section Creating Process Flow Variable.

2.   Use this process flow variable as Context Source within process flow. To know, how to use a Process Flow Variable as Context Source, refer to the section Using Context Source and Context Target.

3.   Change the value of the **Property Event Context Enabled** to **yes**.

4.   Post the data using your HTTP client application to the following URL:

     http://<servername>:<serverport>/adeptia/receiveservlet?activityID=<entityid>&userID=<loginname>&password=<loginpassword>&group=IndigoGroup:<Group ID>

where

ServerName	*: Name of the server where Adeptia Server is running.*
ServerPort	*: Port at which Adeptia Server is running. By default, it is 8080.*
EntityID	*:30 digit ID of the HTTP Trigger activity. To view Entity ID of the HTTP Trigger, click View in the HTTP Trigger Page.*
LoginName	*: User ID of the Adeptia Server*
LoginPassword	*: Password of the Adeptia Server*
Group ID	*: 30 digit ID of the group, the user belongs to. To view Group ID of the group, click View in the Manage group page.*

CREATING JMS EVENT

The JMS Event enables you to specify when and how frequently the process flow should be executed if any message is updated in a queue or topic of a JMS Server.

This feature is available in:

Enterprise	Premier	Professional	Express

Enterprise	Premier	Professional	Express
✓	✓	✓	

Prerequisites

- *JMS Provider* activity must be created before creating *JMS Event* activity.

Steps to create a JMS Event

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Events > JMS**.

   The *Manage JMS Event* screen is displayed (see Figure 715).

Figure 715: Manage JMS Event

3. Click the Create New link. The *Create JMS Event* screen is displayed.

4. Enter the name for the new JMS Event in the textbox **Name**. Then, enter the description for the JMS Event in the textbox **Description**.

5. Select the JMS Provider activity from the dropdown list **JMS Provider**.

> **i** To learn how to create JMS Provider activity, refer to the section *Creating JMS Provider* in *Administrator Guide*.

6. Select the Connection Type as either **Topic** or **Queue** from the dropdown list **Connection Type**.

7. Select the **Durable Subscriber** checkbox if the JMS Subscriber is durable. If a client needs to receive all the messages published on a topic, including the ones published while the subscriber is inactive, it uses a Durable Subscriber. This is applicable only when the connection type is Topic.

8. Enter the subscriber ID in the textbox **Subscriber ID**.

9. Enter the name of queue or topic as configured in the JMS Server in the **Queue Or Topic Name** field.

10. Select the type of message, which you want to fetch, from the **Message Type** drop-down list. You can select :

    a. Text

    b. Byte

    c. Both

11. If you want to select a specific message from the JMS Server, enter the message selector in the *Message Selector* field.

> **i** The message selector is used to specify the filter criterion to receive a message that the user is interested in. The messages can be filtered based on only header references and properties references of the message. The message selector uses SQL92 query syntax to define the filter

criteria. SQL92 is widely used to query the entire standard databases i.e. Oracle, SQL Server. The only difference between the database query and the message selector query is that the message selector uses, only a part of the query which is after the where clause.

The following message selector selects messages with a message type of car and color of blue and weight greater than 2500 pounds:

```
JMSType = 'car' AND color = 'blue' AND weight > 2500
```

The following message selector selects message with the property Sport has value either as Basketball or Football.
```
Sport in ('Basketball','Football')
```

12. Enter the username and password required to connect to JMS Server in the textboxes **UserName** and **Password** respectively.

Then, re-enter the password in the textbox **Confirm Password** (see Figure 716).

Figure 716: Create JMS Event

To learn about Advanced Properties refer to Changing Advanced Properties section.

To enable email error notification, please refer to the Creating Email Error Notification section.

13. Select the JMS session behavior from the **Session** drop-down list. This drop-down list has the following options:

- **Transactional**: If you select the session behavior to be transactional, then your message will not be lost even if it was not successfully sent via the server or received at the client end. However, then you will be required to put your process flow in the JTA Begin and End block in Process Flow Designer. For this, it is mandatory to set the value of JMS Source property **jtaEnlist** (added in the Properties Panel of the Process Flow Designer) to **true**. By default, its value is **false**.

- **Non-Transactional**: The default session behavior is non-transactional. In a non-transactional JMS session, your message will not be saved and therefore will not be available if in any case it has not been able to successfully sent via the server or received at the client end.

If you select the respective JMS session to be transactional, you need to set the value of the following additional fields. Perform the following steps for the same. These fields are not available for a non-transactional JMS session.

14. Enter the date from which JMS event will start triggering; in the **Event Start Date** field. The date must be in *mm/dd/yyyy* format. Click **Calendar** icon and select the required date from the calendar.

15. Enter the start time from the **Time**dropdown list.

16. Enter the date on which JMS event will stop triggering, in the **Event Expiry Date** field. The date must be in *mm/dd/yyyy* format. Click the calendar icon and select the required date from the calendar.

17. Enter the expiry time from the **Time**dropdown list.

18. Enter the time interval, the JMS event checks the database Server in the **Polling Frequency** field. Enter the digit in the Frequency field and select the unit of time i.e. seconds, minutes or hours etc. from the **Duration**dropdown list (Figure 662).

> **i** Recommended minimum Polling Frequency is 30 seconds.
>
> To learn about Advanced Properties refer to **Changing Advanced Properties** section.

Figure 662: Create JMS Event

> **i** You can view details of a process flow associated with a JMS event, by clicking the process flow displayed under *Associated Process Flows* on the Manage JMS Event screen.

19. Click the **Save** button.

> You can view details of a process flow associated with a JMS event, by clicking the process flow displayed under *Associated Process Flows* on the Manage JMS Event screen.

CREATING MAIL EVENT

The Mail Event allows you to schedule a process flow to be triggered when a specified mail arrives on the mail Server.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a Mail Event

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Events > Mail**.

   The *Manage Mail Event* screen is displayed (see Figure 717).

Figure 717: Manage Mail Event

3. Click the Create New link. The *Create Mail Event* screen is displayed.

4. Enter the name and description of the new Mail Event activity in the textboxes **Name** and **Description** respectively.

5. Select the Internet standard protocol to be used for retrieving incoming mails, from the dropdown list **Protocol**. You can select the POP3 protocol, IMAP4 protocol or the MAPI protocol. Based on the selected protocol, the default port number for that protocol is displayed in the Port field. The MAPI protocol is used to access mails on the Microsoft Exchange Server. It uses J-Integra as a bridge and uses a domain for exchanging mails, instead of a port. Thus, if the MAPI protocol is selected, then the port number field appears as disabled.

6. Enter the address of the incoming mail server in the textbox **IncomingMail Server**.

7. Enter the domain name that is configured for the Microsoft Exchange Server in the **Domain** field. This field appears as enabled only when the MAPI protocol is selected in the **Protocol** dropdown list.

8. Enter the host machine name on which CDO is installed and configured, in the **CDO Host Machine** field. This field appears as enabled only when the MAPI protocol is selected in the dropdown list **Protocol**. When Java applications use J-Integra to exchange mails on Microsoft Exchange Server, then CDO serves as the intermediary between the Java application and Microsoft Exchange Server.

9. Select the *Secure* checkbox, if the specified incoming mail server is SSL enabled.

10. The default port number for the selected protocol is displayed in the **Port** field. If you want to change this port number, enter the new port number in the *Port* field. If MAPI protocol is selected, then the port number field appears as disabled.

11. Enter the username and password required to access the mail Server in the textboxes **User ID** and **Password** respectively. Then, re-enter the password in the textbox **Confirm Password** (see Figure 718).

Figure 718: Create Mail Event

12. Select any of the following filter criteria:

- Sender E-mail
- Mail Subject
- Mail Content
- File Attachment

You may select more than one filter criteria.

13. Enter the sender's email address and subject of email in the textboxes **Sender Email** and **Mail Subject** respectively.

> In **Sender E-Mail** field, you can define more than one email ids separated by comma (,).

14. To define search based on mail content, enter the required content in the textbox **Mail Content**.

> You can also use asterisk and Wild Cards in **Mail Content** field.
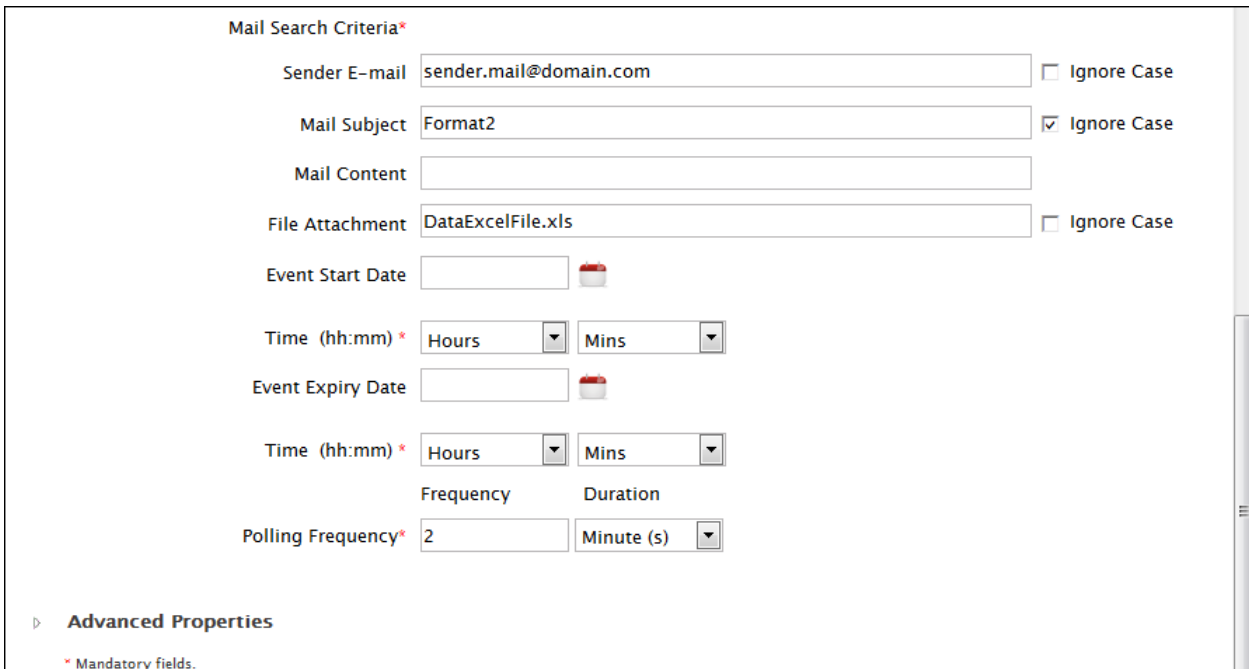
15. Enter the name of the file attached with mail in the textbox **File Attachment**.

> You can define the *Sender E-Mail, Mail Subject* and *File Attachment* as case sensitive or insensitive by selecting/disabling the **Ignore Case** checkbox displayed next to the **Mail Subject** field.

16. Enter the date from which Mail event will start triggering; in the **Event Start Date** field. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon and select the required date from the calendar.

17. Enter the start time from the dropdown list **Time**.

18. Enter the date on which the Mail event will stop triggering; in the **Event Expiry Date** field. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon and select the required date from the calendar.

19. Enter the expiry time from the dropdown list **Time**.

20. Enter the time interval, the Mail event will check for the existence of the mail, in the **Polling Frequency** field. Enter the digit in the **Frequency** field and select the unit of time i.e. seconds, minutes or hours etc from the **Duration** dropdown list.

> Recommended minimum Polling Frequency is 30 seconds.

21. To specify maximum number of emails to be processed at a time, click **Advanced Properties** and enter the required value in the textbox **Mail Process Concurrency** (see Figure 719).

Figure 719: Create Mail Event

> If there is large number of emails in the mailbox, which meet the search criteria of the mail event, all the mails will be processed at a time. If you want to limit the number of emails to be

> process at a time with this event, enter the appropriate value in the textbox **Mail Process Concurrency**. Now mail event will process only the specified number of emails at a time. Remaining emails will be processed at the next polling frequency. Mails are processed on First In First Out (FIFO) basis.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.
>
> To enable email error notification, please refer to the Creating Email Error Notification section.

22. Click the **Save** button.

> ℹ️ If a mail event is deactivated and then activated again, it will trigger an event for an existing email.
>
> You can view details of a process flow associated with a mail event, by clicking the process flow displayed under *Associated Process Flows* on the **Manage Mail Event** screen.
>
> A mail event can trigger multiple process flows at a time. Each process flow uses a mail source. When multiple process flows use a mail source at a time, errors can occur. Thus it is advisable to limit the number of process flows triggered by a mail event. You can also set the number of retries and the sleep time between each retry, in case an error occurs when using a mail box. For details on these settings, refer to *Appendix A* in *Administrator Guide*.

CREATING TIMER EVENT

The Timer Event enables you to specify the date, time and frequency at which a process flow should be executed. This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create a Timer Event

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Events > Timer**.

   The *Manage Timer Event* screen is displayed (see Figure 720).

Figure 720: Manage Timer Event

3. Click the **Create New** link. The *Create Timer Event* screen is displayed.

4. Enter the name and description of the new Timer Event activity in the textboxes **Name** and **Description** respectively.

5. Enter the date from which the Timer event will start triggering, in the **Event Start Date** field. The date must be in *MM/dd/yyyy* format. Click the **Calendar** icon to select the required date from the calendar.

6. Enter the start time from the dropdown list **Time**.

7. Select one of the **Expiry Criteria** displayed in the table below.

Table 5: Expiry Criteria

Expiry Criteria	Description
.	For all files with some extension
Run Only Once	Select this option if the process flow needs to be triggered only once.
Repeat Count	Select this option if the process flow needs to be triggered for given number of times. Enter the required number in the Repeat Count field. Progress flow is triggered Repeat Count + 1 times.
Expiry By Date/ Time	Select this option if the process flow needs to be triggered up to the given date and time on a given interval. To select the expiry date click on the calendar and select the required date. Select the expiry time using Hours and Mins dropdown list.

8. If **Repeat Count or Expiry By Date/Time** option is selected as expiry criteria, enter the time interval in the textbox **Frequency** (see Figure 721).

Figure 721: Create Timer Event

> Recommended minimum Polling Frequency is 30 seconds.
>
> To learn about Advanced Properties refer to Changing Advanced Properties section.
>
> If you want to learn about event misfire handling then, please refer to the Handling Misfire Event section.
>
> To enable email error notification, please refer to the Creating Email Error Notification section.

9.   Click the **Save** button.

> You can view details of a process flow associated with a timer event, by clicking the process flow displayed under *Associated Process Flows* on the Manage Timer Event screen.

CREATING EVENT ERROR NOTIFICATION

You can now get an email notification whenever any event encounters an error. This email would notify you that the execution of an event has failed. You can use this feature for all the newly created and existing events. For example, you can use this feature for a File Event by following the steps mentioned below.

Steps to enable event error notification feature

1.   On the Adeptia Suite homepage, click the **Develop** tab.

2.   Click on the **Events** menu and click on the **File** menu item (see Figure 722).

Figure 722: Enabling Event Error Notification For File Event

3.   Click on the **Create New** button and fill out details for the new File Event. For more details on how to create a file event, please refer to the Creating File Event section.

4.   Expand the **Advance Properties** section of the *New File Event* activity and in the **Notification Receiver Email-ID(s)** field, enter the email-id to which you want to send the email notifications (see Figure 723).

Figure 723: Email-Id For Configuring Event Error Notification

5.   Click on the **Save** button to save your File Event activity with Email Error Notification feature enabled.

> In order to enable the Email Error Notification feature, you need to configure the outgoing mail in the Adeptia Suite. You can configure that either at the time of installing the Adeptia Suite or after its installation.
>
> To configure the outgoing mail at the time of installation, please refer to the Installing Adeptia Suite In GUI Mode section of the Installation guide.
>
> To configure the outgoing mail after installation, please refer to the Mail Server Parameters section of the Administrator guide.

TRIGGERING PROCESS FLOW USING WEB SERVICE TRIGGER

Web Service Trigger is an interface, which allows a Web Service client to trigger any process flow in Adeptia Server. The Web Service client needs to pass the ID of the process flow and any input parameters that need to be passed into the Process Flow.

To trigger a Process Flow, the Web Service client needs to know details of the Web Service published and format in which input parameter can be passed.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	

Steps to get the information required by Web Service Client to trigger a Process Flow

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Events & Triggers > Web Service**.

   The *Web Service Trigger* screen is displayed (see Figure 724).

Figure 724: Web Service Trigger

3. This screen shows the details of the Web Service published. All the parameters needed by the Web Service client to invoke the service are displayed in this screen.

4. Use the WSDL URL and Sample Input Document displayed in the Figure 724 to trigger the Process Flow.

5. A Sample Input Document which is to be used to trigger the process flow is displayed below (see Figure 725).

```
<?xml version="1.0" encoding="ISO-8859-1"?><request
xmlns:xsi='http://www.w3.org/2001/XMLSchema-
instance'><Transactionid>19216800113810962694568590003</Transactionid>
<Map><Key>name</Key><value>Adeptia</value></Map></request>
```
Figure 725: Sample Input Document used to Trigger Process Flow

6. Make sure to replace the Transaction ID with the ID of the Process Flow, which is to be triggered.

   > ℹ️ While creating the Web Service trigger, you need to ensure that Transport security type is selected, as this trigger does not support Message security type.

7. To pass the parameter to the process flow, enter the key(name) and the value of the parameter in the *Map* tag of the XML shown above.

> **i** To know the ID of a Process Flow, In the Manage Process Flow page, click **View** link against the process flow.

ACTIVATING TRIGGER EVENTS

Steps to Activate a Trigger Event

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Events > File**.

   The *Manage File Event* screen is displayed with the list of existing events (see Figure 726).

Figure 726: Manage File Event

3. Select the Event to be activated. The links: **Delete**, **Activate**, and **Deactivate** gets enabled (see Figure 727).

Figure 727: Manage File Event

> **i** If you select more than one event to be activated, the following application alert message is displayed:
>
> Please select one activity at a time.

4. Click the link **Activate**. A confirmation application message is displayed Figure 728).
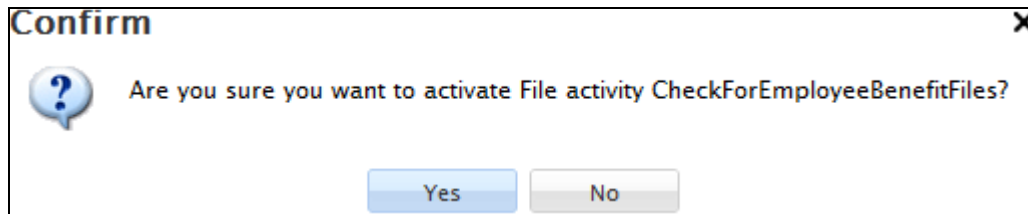
Figure 728: Application message

5.   Click **Yes** to confirm.

6.   A status message is displayed confirming the trigger event activity has been activated successfully (see Figure 729).
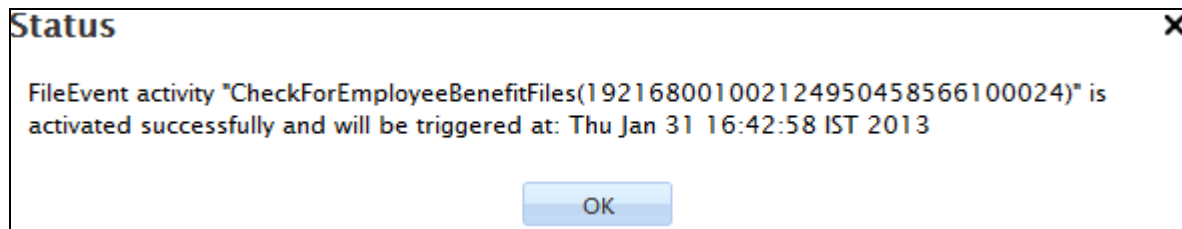
Figure 729: Event Execution Status Message

TRIGGERING PROCESS FLOWS IN SEQUENCE

Process Flows, which are binded with any event, are executed at every polling frequency irrespective of the fact that the process flow(s) triggered at the previous polling frequency still may be running.

In addition, there could be possibility that at each polling frequency, multiple process flows are executed. For Example a Process flow may be binded with a File Event, and at each polling frequency multiple files fulfill the trigger criteria. In this case for each file the binded process flow will be executed concurrently.

An advanced property **Trigger Process Flows in Sequence** is provided in all events to execute the process flows in sequence. You can check this checkbox, to allow process flows to be triggered in sequence. For Example if a Process Flow is binded with a File Event, and at each polling frequency, suppose five files are fulfilling the trigger criteria. In this case the process flow is executed five times or you can say five instance of this process flow are executed in parallel.

When **Trigger Process Flows in Sequence** is checked, then the process flow is executed five times, but in sequence. Means, when the execution of first instance will be completed, then only the execution of second instance will start. Now in case the next polling frequency comes before the completion of all the instances of the process flow triggered at the previous polling, then the event is not fired and treated as misfired event. Once the execution of all the instances of the process flow is completed, then the misfired event is fired. This should be noted that even if an event goes misfired multiple times, only one misfired event is fired at the completion of the previous execution.

Steps to enable "Trigger Process Flow in Sequence" property

1.   Select to open the required Event activity.

2.   Click **Advanced Properties** of the selected Event. Advanced Properties of the respective Event activity are displayed.

3.   Select the **Trigger Process Flow in** Sequence checkbox (see Figure 730).

Figure 730: Event's Advanced Properties

4. Click **Save** to save the event.

HANDLING MISFIRE EVENT

An event may not be fired at the scheduled time due to multiple reasons. These are outlined as:

- No thread is available (refer to org.quartz.threadPool.threadCount property in the Administrator guide)
- System is busy

When the event is not fired at the scheduled time, it is considered as a delayed event. The delayed event will be fired, when the thread becomes available or the system is not too busy. This will happen as long as delay is not more than misfire threshold. If delay is more than misfire threshold, event is considered as a misfired event. The misfire threshold is specified by following parameter defined in quartz.properties file:

org.quartz.jobStore.misfireThreshold = 10000

10000 = 10 Seconds

10 seconds is the default value of misfire threshold, which can be changed, based on your requirements.

The process of changing the advanced properties of a File Event is explained below.

To change the permission of an activity:

1. On the Adeptia Suite homepage, click on the **Develop** tab.

2. Go to **Events** → **File**. This action will display you the *Manage File* screen (see Figure 731).
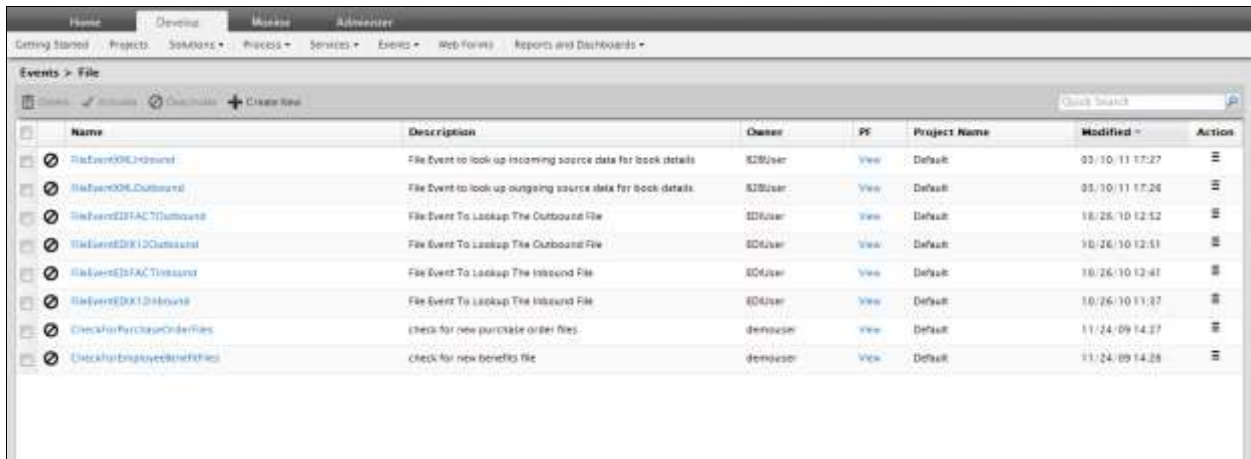
Figure 731: Manage File Screen

3. Click the activity that you want to edit. This action will display you the *Edit File Event* screen.
4. To change the advance properties, click on the **Advanced Properties** section. This action will display you the advanced properties of File event (see Figure 732).
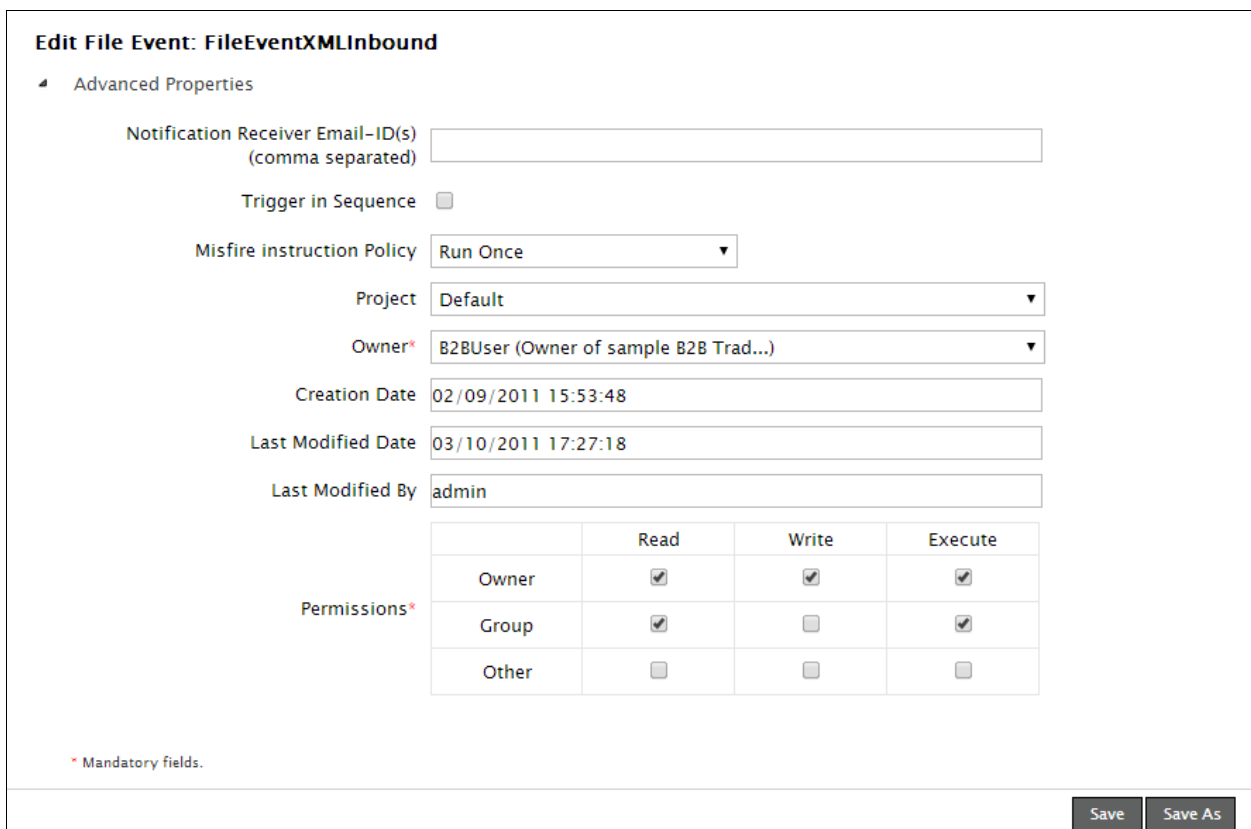
Figure 732: View Advanced Properties (File Event)

5. If you want to enable misfire handling for your file event then, select the **Run Once** option from the **Action on Misfire Event** drop-down list. If you do not wish to enable misfire handling for your file event then, select the **Ignore Misfire** option.

The **Run Once** option will run only one collective instance of all the misfires for a particular event. Whereas the **Ignore Misfire** option will not run a misfired event.

The default value for **Action on Misfire Event** field is set to **Run Once** for all of the earlier events.

6. After changing the properties, click the **Save** button to save the changes.

USING DATA INTERFACE

Data Interface is used to configure activities which can be overridden at execution time of the process flows. Using this interface, you can attach an event with the process flow and the activities that will be overridden at execution time of the process flows.

Data interface is useful when you want to process data of different formats using different schema and mapping. In this case you don't have to create different process flow for data of each format. You can use only one process flow and create data interfaces for each format of data. In data interface you can choose the event, which will trigger the process flow, and the activities which will be overridden during the execution of the process flow when it is triggered by particular event.

This feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

Steps to create Data Interface

1. On the Adeptia Suite home page, select the **Source** and **Destination** applications from the dropdown list. Alternetively, on the Adeptia Suite homepage, go to **Develop > Solutions > Data Interfaces** and then click the **Create New** link. (see Figure 733).
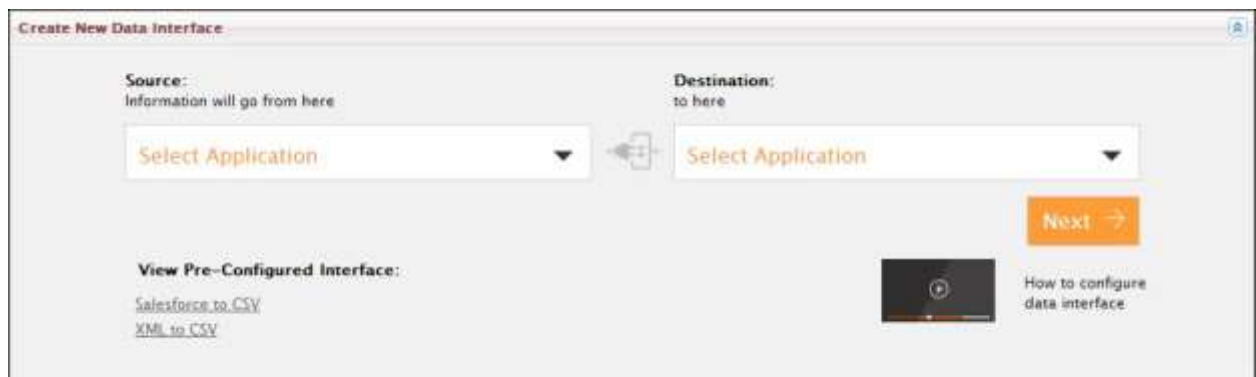
Figure 733: Home Page

> **Source** is the application from where the information will go and **Destination** is the application where the information reaches.
>
> On the home page you find some Pre-Configured, read-only interfaces like *Salesforce_to_CSV* or *XML to CSV* (see Figure 726). You can make a copy of these interfaces and customize them as required. However in case of *Salesforce_to_CSV,* you must also

> replace the values of the Sample Server URL with your own values in the Database Connection Info screen. To replace these values, follow the below steps:
>
> 1. Click the *Salesforce_to_CSV* link.
> 2. On the **Edit Data Interfaces: Salesforce_Contacts_to_csv** screen, click the **Source** field to expand.
> 3. In the **My source layout details** field, click the Edit button. The AdvanceDbSchema window is displayed.
> 4. Click the Edit button in the **Database Info** field. The DatabaseConnectionInfo screen is displayed.
> 5. Replace the sample URL values with your own values in the **Server URL** textbox (refer Table 3: Server URL Pattern for help).
> 6. Click **Save.**

2. Click the **Next** button. The *Create New Data Interfaces* screen is displayed (see Figure 734).

Figure 734: Create New Data Interface

3. Enter the name and description of the new Data Interface Configuration in the **Name** and **Description** fields respectively.

4. Click the **Source** field to expand. Details related to source of the data interface activity are displayed (see Figure 735).

Figure 735: Create New Data Interfaces

2. Select the values for the **Trigger, My source layout details**, and **My source Location details** fields respectively.

> The fields and their respective values in the dropdown lists might change depending on the application you select.
>
> Table 1 and 2 show the possible values for various Source Applications.

Table 1: Source Details

Source Application	Trigger	My Source Layout is
FTP	FTP Event	• XML Schema • Adv. Positional Schema • Excel Schema • Positional Schema • Adv. Text Schema • Text Schema

Source Application	Trigger	My Source Layout is
File	File Event	- XML Schema - Adv. Positional Schema - Excel Schema - Positional Schema - Adv. Text Schema - Text Schema
Mail	Mail Event	- XML Schema - Adv. Positional Schema - Excel Schema - Positional Schema - Adv. Text Schema - Text Schema
IDoc	SAP Server	SAP IDOC Schema
Box/DropBox/ Google Drive	Application Event	- XML Schema - Adv. Positional Schema - Excel Schema - Positional Schema - Adv. Text Schema - Text Schema

The following table lists the applications that use Calendar event, Advance Database Schema, and Advance Database Source as values in the **Trigger**, **My Source Layout details** and **My Source Location Details** fields respectively:

Table 2: Source Details

Source Application	Trigger	My Source Layout details	My Source Location Details
- Amazon SimpleDB - Database - Dynamics CRM	Calendar event	Advance Database Schema	Advance Database Source

Source Application	Trigger	My Source Layout details	My Source Location Details
• Google Spreadsheet • NetSuite • OData • OFX • Open LDAP • QuickBooks • SAPNet • SalesForce • SharePoint • RSS Feeds • A mazon DynamoDB • Dynamics GP			

3. If the Trigger does not already exist in the **Trigger** dropdown list, click the [New] button to create a new one. Enter the values in the newly displayed window (see Figure 736). To edit an existing one, click the [Edit] button.

Figure 736: Create New Trigger

> To learn how to create a Trigger, refer to the Creating Trigger and Events section.

4. If an Advance Database Schema does not already exist in the **My Source Layout details** drop down list, click the New button to create a new one. Enter the values in the newly displayed window (see Figure 737). To edit an existing one, click the Edit button.

Figure 737: Create New Database Schema

ℹ️   To learn more on how to create a Schema activity, refer to *Creating Schema Activity* section.

5.   To create a new **Database Info** while creating schema, select the [Create New] button(see above figure). This displays the following window.

Figure 738: Create New Database Info

In the **Server URL** textbox, the URL is displayed as per your selected application. Replace the sample values of the URL fields with your own values in the Server URL textbox.

For example: While using netsuite you may enter: jdbc:netsuite:Account Id=**TSTDRH354273**;Password=**netsuite**;User=**John.Smith@adeptia.com**;Role Id=**4**;Version=**2014_1**;Location=**d:\\netsuite_xsd**;

To know about the Server URL Pattern of other applications, refer Table 3.

Table 3: Server URL Pattern

JDBC Driver	URL Format
AmazonSimpleDB	jdbc:simpledb:Access Key=< **Access Key** >;Secret Key=<**Secret Key**>; Here: < **Access Key** > is the Amazon Web Services access key. <**Secret Key**> is the Amazon Web Services secret key.
DynamicsCRM	jdbc:dynamicscrm:User=< **User** >;Password=< **Password** >;URL=< **URL** >;CRM Version=< **CRM Version** >; Here: < **User** > is the user that is authenticating to the Dynamics CRM site. < **Password** > is the password used to authenticate to the Dynamics CRM site.

JDBC Driver	URL Format
	< **URL** > is the root URL of the Organization. For example a CRM 4.0 or CRM 2011 URL would look like http://MySite/MyOrganization. For CRM Online, the URL would look like https://myOrg.crm.dynamics.com/. < **CRM Version** > is the type of Dynamics CRM Server to which you are connecting. Accepted entries are: [CRM Online WLID, CRM Online Office 365, CRM 2011, CRM 2011 IFD, CRM 4.0, CRM 4.0 IFD, CRM 2013, CRM 2013 IFD]
GoogleSpreadsheets	jdbc:googlesheets:user=< **User** >;password=< **Password** >;Spreadsheet=< **Spreadsheet** >; Here: < **User** > is the user of the Google account used to authenticate. < **Password** > is password of the Google account used to authenticate. < **Spreadsheet** > is the name or feed link of the spreadsheet to be viewed.
NetSuite	jdbc:netsuite:Account Id=< **Account Id** >;Password=< **Password** >;User=< **User** >;Role Id=< **Role Id** >;Version=< **Version** >;Location=< **Location** >; Here: < **Account Id** > is the company account your user name is associated with on NetSuite. < **Password** > is the password of the NetSuite user used to authenticate. < **User** > is the user of the NetSuite account used to authenticate. < **Role Id** > is the Internal ID of the role that will be used to log in to NetSuite. Leave empty to use the user's default role. < **Version** > is the version of the NetSuite API in usage. Defaults to 2013_1. < **Location** > is a path to the directory that contains the schema files defining tables, views, and stored procedures.
OData	jdbc:odata:user=< **User** >;password=< **Password** >;URL=< **URL** >; Here: < **User** > is the user that is authenticating to the OData site. < **Password** > is the password used to authenticate to the OData site. < **URL** > is the Url to the Organization root or the OData services file. For example, http://MySite/MyOrganization.
OFX	jdbc:ofx:OFXUser=< **OFXUser** >;OFXPassword=< **OFXPassword** >;FIID=< **FIID** >; Here: < **OFXUser** > is the username used to connect to the OFX server. < **OFXPassword** > is the password used to connect to the OFX server. < **FIID** > is the Financial institution identifier.
OpenLDAP	jdbc:LDAP:user=< **User** >;password=< **Password** >; Here:

JDBC Driver	URL Format
	< **User** > is the Distinguished Name of a user. < **Password** > is the password for the Distinguished Name of the specified user.
QuickBooks	jdbc:quickbooks:Schema=< **Schema** >;user=< **User** >;password=< **Password** >;URL=< **URL** >; Here: < **Schema** > is the edition of QuickBooks being used. Desktop by default. < **User** > is a username for the Remote Connector connection (if required by the Remote Connector). < **Password** > is a password for the Remote Connector connection. < **URL** > is the URL for the Remote Connector. For example: 'http://localhost:2080'.
SalesForce	jdbc:salesforce:User=< **User** >;Password=< **Password** >;Security Token=< **Security Token** >; Here: < **User** > is the user of the Salesforce account used to authenticate. < **Password** > is the password of the Salesforce account used to authenticate. < **Security Token** > is the security token of the Salesforce account used to authenticate.
SAPNetWeaver	jdbc:sap:Host=< **Host** >;User=< **User** >;Password=< **Password** >;Client=< **Client** >;System Number=< **System Number** >;ConnectionType=< **Connection Type** >;Location=< **Location** > Here: < **Host** > is the Host name of the target system. < **User** > is the user that is authenticating to the SAP system. < **Password** > is the password used to authenticate to the SAP system. < **Client** > is the client authenticating to the SAP system. < **System Number** > is the number by which the target system is defined. < **Connection Type** > is the type of connection you are making, it must be a JCO connection. Ensure that you place the *sapjco3.jar* file in the */ServerKernel/ext* directory. < **Location** > is a path to the directory that contains the schema files defining tables, views, and stored procedures to work with your chosen data source.
SharePoint	jdbc:sharepoint:user=< **User** >;password=< **Password** >;Auth Scheme=< **Auth Scheme** >;URL=< **URL** >; Here: < **User** > is the SharePoint user account used to authenticate. < **Password** > is the password used to authenticate the user. < **Auth Scheme** > is the scheme used for authentication. Accepted entries are:

JDBC Driver	URL Format
	[NTLM,BASIC,DIGEST,NONE,NEGOTIATE]. < **URL** > is the base URL for the site.
OpenLDAP	jdbc:LDAP:user=< **User** >;password=< **Password** >; Here: < **User** > is the Distinguished Name of a user. < **Password** > is the password for the Distinguished Name of the specified user.
RSS Feeds	jdbc:rss:user=< **User** >;password=< **Password** >;URL=< **URL** >; Here: < **User** > is the user of RSS Feeds account used to authenticate. < **Password** > is the password used to authenticate the user. < **URL** > is the URL of the feed.
Amazon DynamoDB	jdbc:dynamodb:Access Key=<**Access Key**>;Secret Key=<**Secret Key**>;Domain=<**Domain**>;Region=<**Region**>; Here: <**Access Key**> is your AWS account access key. This value is accessible from your AWS security credentials page. <**Secret Key**> is your AWS account secret key. This value is accessible from your AWS security credentials page. <**Domain**> is your AWS domain name. You can optionally choose to associate your domain name with AWS. <**Region**> is the hosting region for your Amazon Web Services.
Dynamics GP	jdbc:dynamicsgp:user=<**user**>;password=<**password**>;URL=<**URL**>; Here: <**user**> is the user that is authenticating to the Dynamics GP Web Services. <**password**> is the password for the user connecting to Dynamics GP. <**URL**> is the URL of the Dynamics GP server.

6. If an Advance Database Source does not already exist in the **My Source Location details** drop down list, click the [New] button to create a new one. A new window is displayed (see Figure 742). To edit an existing one, click the [Edit] button.

Figure 739: Create New Database Source

> To learn how to create an Advanced Database Source, refer to the [Creating Source Activity](#) section.

7. Similarly click the **Target** field to expand. Details related to target of the data interface activity are displayed.
8. Select the details for the **Convert source to this target layout**, **My target layout details**, and **My target location details** fields respectively. Create new if they don't already exist in the dropdown list.

> The fields and their respective values in the dropdown lists might vary depending on the application you select.
>
> The following tables (4 & 5) list the possible values for various target applications.

Table 4: Target Details

Target Application	Convert source to this target layout	My Target Location Details
FTP	- XML Schema - Adv. Positional Schema - Excel Schema - Positional	FTP Target

Target Application	Convert source to this target layout	My Target Location Details
	Schema • Adv. Text Schema • Text Schema	
File	• XML Schema • Adv. Positional Schema • Excel Schema • Positional Schema • Adv. Text Schema • Text Schema	File Target
LAN	• XML Schema • Adv. Positional Schema • Excel Schema • Positional Schema • Adv. Text Schema • Text Schema	LAN File Target
Mail	• XML Schema • Adv. Positional Schema • Excel Schema • Positional Schema • Adv. Text Schema • Text Schema	Mail Target
Box	• XML Schema • Adv. Positional Schema • Excel Schema • Positional	Box Target

Target Application	Convert source to this target layout	My Target Location Details
	Schema • Adv. Text Schema • Text Schema	
DropBox	• XML Schema • Adv. Positional Schema • Excel Schema • Positional Schema • Adv. Text Schema • Text Schema	DropBox Target
GoogleDrive	• XML Schema • Adv. Positional Schema • Excel Schema • Positional Schema • Adv. Text Schema • Text Schema	GoogleDrive Target

> ℹ️ When you select an IDOC as a Target Application, the allowed value in the **My Target Layout details** field is an *SAP IDOC Schema* and that in the **My Target Location Details** field is an *SAP Client*.

The following table lists the applications that use Advance Database Schema and Advance Database Target as values in the **My Target Layout details,** and **My Target Location Details** fields respectively:

Table 5: Target Details

Target Application	My Target Layout details	My Target Location Details
• Amazon SimpleDB	Advance Database	Advance Database

Target Application	My Target Layout details	My Target Location Details
• Database • Dynamics CRM • Google Spreadsheet • NetSuite • OData • OFX • Open LDAP • QuickBooks • SAPNet • SalesForce • SharePoint • A mazon DynamoDB • Dynamics GP	Schema	Target

> ℹ Values **for My Target Layout Details** are displayed according to your Target Layout selection.

12. Select the mapping activity, which is used to map fields of selected source and target schemas, in the **Use this mapping for data conversion** dropdown list.

> ℹ To open the Data Mapper applet through Data interface configuration window, make the following changes according to your browser:
>
> **Internet Explorer**:
> 1. Go to *Internet Options > Privacy* to disable the pop-up blocker' checkbox.
> 2. Go to *Internet Options > Security tab > Custom Level button >* to enable the *Scripting of Java applets* option (scroll down to search).
> 3. Click OK.
>
> **Chrome**:
> 1. Go to *Settings* > Click the *Show advanced settings* option.
> 2. Go to *Settings > Privacy* and click the *Content Settings* button.
> 3. Go to *Pop-Ups* section (scroll down to search).
> 4. Select the *Allow all sites to show pop-ups* radio button.
> 5. Click *Done*.

13. Click the **Save** button. This displays the *Manage Data Interfaces* screen (see Figure 740).

Figure 740: Manage Data Interfaces

14. Select the Data Interface Activity and click the **Activate** link.

| | This triggers the process flow and the data is transferred from the source to destination application.

To view data interface log, refer to the *Monitoring data interface* section of the *Business User Guide*. |
|---|---|

RECOVERY

Adeptia Suite has a recovery feature to automatically recover process flows, which are not executed completely due to Kernel shutdown. Kernel shutdown can occur due to following reasons:

- System is shutdown
- Kernel is stopped

When kernel restarts, all incomplete process flows **which are recoverable** are recovered.

SHUTTING DOWN QUARTZ SCHEDULER

Quartz scheduler plays an important part in the recovery of objects and in case of an emergency kernel shutdown. As the name suggests, scheduler keeps a track of all the events, activity and process flows that are running or will run in future. As a part of the recovery process, now when your kernel shuts down, the quartz scheduler will carry out the following tasks before it shuts itself down:

- Execute all the events that are currently running
- Save the state of the scheduler

RECOVERABLE PROCESS FLOWS

You can make a process flow as **recoverable process flow** using one of the following options:

- Enabling Implicit Recovery
- Using Checkpoints
- Using Human Workflow activity

Enabling Implicit Recovery

Implicit Recovery is a unique feature which means that the execution state of the process flow is recovered automatically in case the process flow is not executed completely due to some reasons. Now, when the kernel restarts, the process flow resumes execution from the point where it leaves.

> - Only, Synchronous activities are implicitly recoverable in the process flow. If asynchronou
>   activities are used in process flow, they are made recoverable explicitly using check points
>   To know how to add checkpoint refer to the section **Using Actions in Process Flow**
>
> - Actions such as Delay, Put Context Var do not have Implicit Recovery Implementation.
>
> Implicit recovery is supported for any level of parent-child relationship in the process flow.
> For a recoverable parent process flow, all its child process flows are implicitly made
> recoverable irrespective of whether the child process flow is configured as recoverable or not.

Using Checkpoints

Process flows, which have checkpoints, are recoverable. Checkpoint is an action which can be used in a process flow during it creation. There can be any number of checkpoints in a process flow. Checkpoints should not be used after an asynchronous activity which is generating a source stream. Otherwise after recovery the source stream generated by asynchronous activity will not available for the target activity which will be consuming this stream. To know how to add checkpoint refer to the section Using Actions in Process Flow .

Using Human Workflow Activity

Process flows which use Human Work Flow activities, are recoverable. Human work flow activity itself acts as a checkpoint. To know how to add Human Workflow Activity in the process flow, refer to the section Creating Workflow Task.

HOW RECOVERY WORKS

During execution of a process flow, at every checkpoint BPM Server stores the current state of the process flow in a recovery file. There is one recovery file for each execution of a process flow. These recovery files are stored in a recovery folder defined in the property *abpm.recovery.repository.root*. If kernel goes down during execution of process flow, recovery file will have the state of the process flow till the last checkpoint. If no checkpoint is reached, no recovery file is created and the process flow can never be recovered after failure. In the recovery file only state of the process flow is saved. Intermediate data of the process flows are stored in the repository folder. Once system is restarted and if recovery is enabled, BPM Server looks for the state of the uncompleted process flow in the recovery file, picks up the intermediate data from the repository file and resumes the process flow.

The recovery file, remains in the recovery folder unless the process flow execution is completed. The recovery of process flows cannot be completed if intermediate data are not available in repository folder. Intermediate data gets deleted automatically by Data Cleanup or user can delete it manually to free disk space. To know more about data cleanup, refer to the section Data Cleanup.

Even if recovery is not enabled, the recovery files created during execution of the process flows are stored in the recovery folder. In this case recovery of the uncompleted process flows are not done. Later on if you want to recover those process flows, you need to enable recovery and restart the kernel. After Kernel is restarted, the uncompleted process flows are recovered.

ENABLING RECOVERY

By default recovery is disabled. To enable the recovery, change the value of the property *abpm.transaction.recovery.enable* from no to yes. To know how to change the property, refer to the section Updating BPM Server Properties.

If Queue Processor is enabled, Queue Processor does the recovery. The property *abpm.transaction.recovery.enable* will not have any effect on recovery process. Queue processor tracks all the jobs (request for execution of process flows). If jobs are not completed in previous run, then queue processor will recover them automatically. To know more about Queue Processor, refer to the section Load Management.

CONFIGURING CHARACTER SET ENCODING

By default, Adeptia Suite supports ISO- 8859-1 character set encoding. In case, the data you are processing through Adeptia Suite contains characters which are part of another character set encoding for example, UTF-8, then you need to change the character set encoding.

Adeptia Suite enables you to define the character set encoding as per your requirement. You can set the character set encoding at the application level if you want to use the particular character set encoding throughout the Adeptia Suite application. In addition, Adeptia Suite also enables you to set the character set encoding at the Adeptia Server activity level within the process flow.

Character Set Encoding defined at activity level within the process flow always takes precedence over the Character Set Encoding defined at the application level.

In the Adeptia Suite, this feature is available in:

Enterprise	Premier	Professional	Express
✓	✓	✓	✓

This chapter describes the following tasks:

- Configuring character set encoding at the application level
- Setting character set encoding while designing schema
- Setting character set encoding while mapping data elements
- Configuring character set encoding within the process flow level

SETTING CHARACTER SET ENCODING AT THE APPLICATION LEVEL

Steps to set character set encoding at the application level

1. Login as *admin* user.

2. On the Adeptia Suite home page, click the **Administer** tab.

3. Go to **Setup** menu. All the options of the **Setup** menu are displayed.

4. Select **Application Settings** option (see Figure 671).
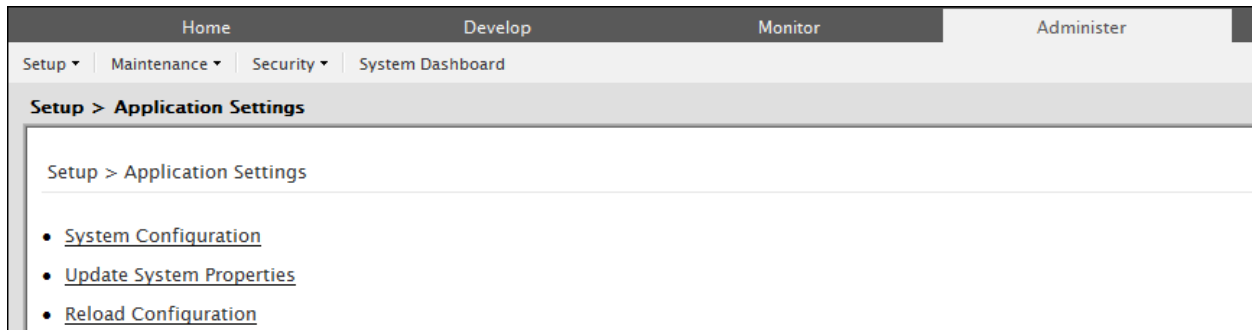
Figure 741: Application Settings

5.   Click **Update System Properties** (see Figure 672).
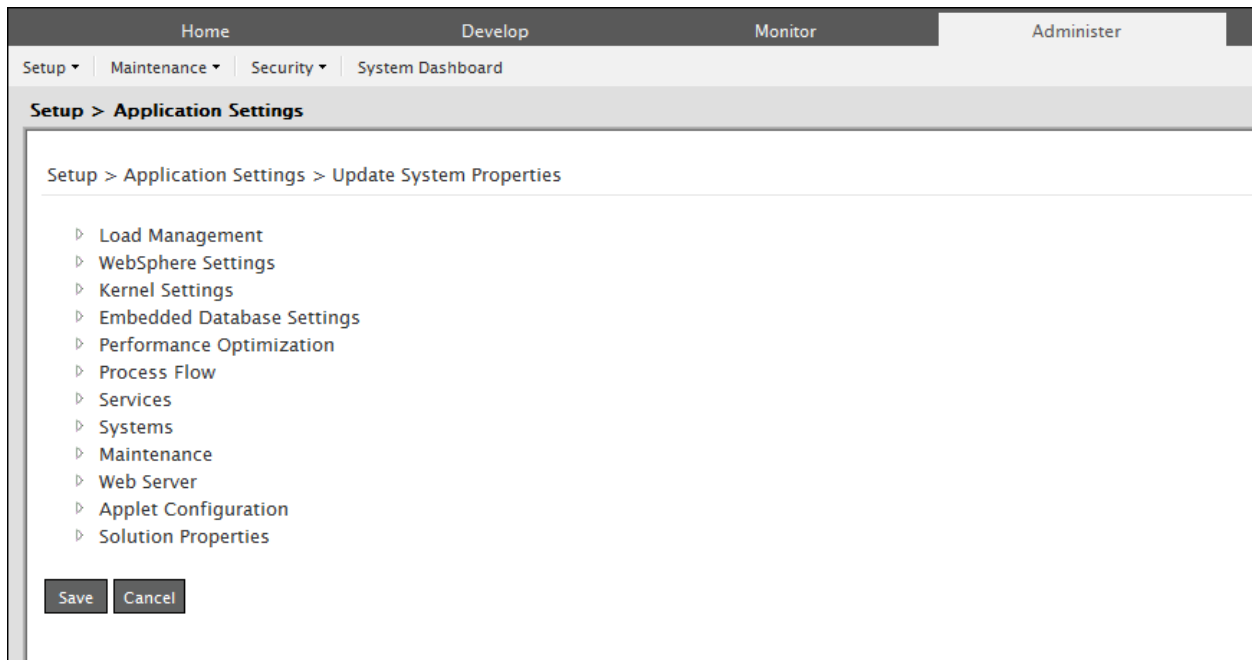
Figure 742: Update System Properties

6.   Expand **Systems** (see Figure 743).
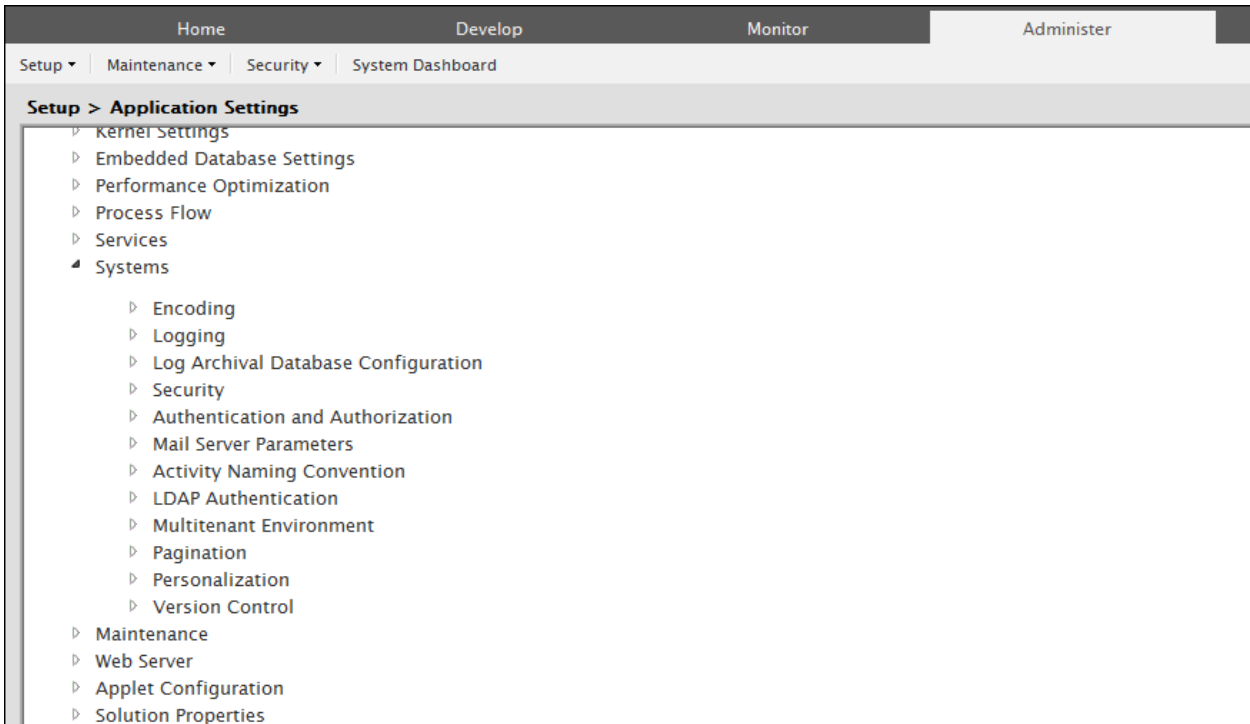
Figure 743: Application Settings: Systems

7. Click **Systems** to expand the hierarchy. Click **Encoding** in this category (see Figure 744).

Figure 744: Update System Properties

8. Enter the value of the character set encoding in the textbox **Value**.

9. Click **Save**. An application message is displayed (see Figure 745).
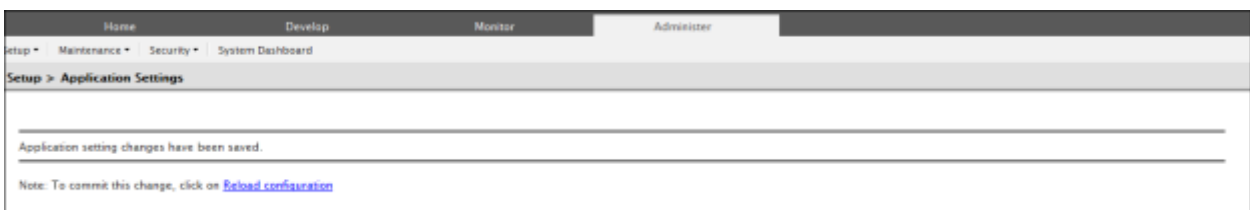
Figure 745: Reload Configuration application message

10. Click the link **Reload Configuration** to commit the page.

SETTING CHARACTER SET ENCODING WHILE DESIGNING SCHEMA

You can also define the required character set encoding while designing schema if the characters set used in the source and target schema are different than the character set encoding defined at the application level. By default, the character set encoding defined at the application level will be applicable at the schema creation level.

Steps to set character set encoding while designing schema

1. On the Adeptia Suite homepage, click the **Develop** tab.

2. Go to **Services** > **Schema** and then click the required schema type. For details on how to create schema, refer to Creating Schema section.

3. Click **Advanced Properties** to expand the hierarchy.

   All items in **Advance Properties** are displayed (see Figure 746).

Figure 746: Advance Properties

4. Change the default character set encoding to the required character set encoding in the textbox **Character Set Encoding**.

5. Set rest of the advance properties as required.

6. Click **Save** to save and apply the set character set encoding to the selected schema type.

SETTING CHARACTER SET ENCODING WHILE MAPPING DATA ELEMENTS

Adeptia Suite enables requires you to define the required character set encoding while mapping the source and target data elements.

Steps to set character set encoding while mapping data elements

1. Ensure that the source and target schemas are loaded and all their elements are listed under their respective nodes.

2. Click the **Actions** menu and select **Set Character Set Encoding for Data Parsing** option (see Figure 747).
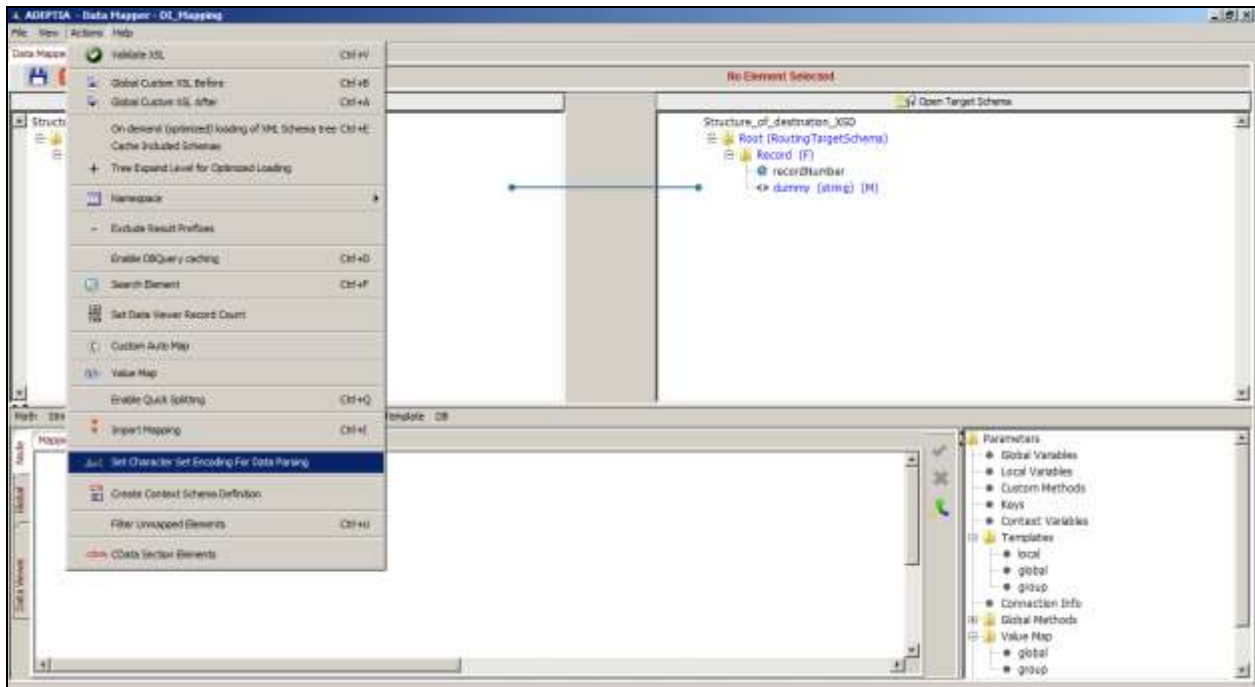
Figure 747: Select Character Set Encoding For Data Parsing

3. The *Character Set Encoding* Dialog is displayed (see Figure 748).
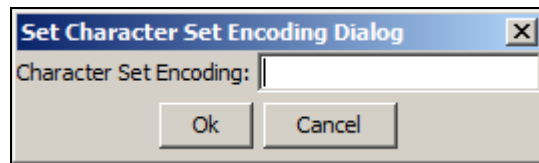
Figure 748: Character Set Encoding Dialog

4. Enter the required character set encoding.

5. Click **OK**. The respective character set encoding will be set.

SETTING CHARACTER SET ENCODING WITHIN THE PROCESS FLOW LEVEL

Steps to set character set encoding at activity level within the process flow

1. To change the character set encoding of any activity in the process flow, open the process flow in process designer and double-click the respective activity. This displays the properties of this activity (see Figure 749).
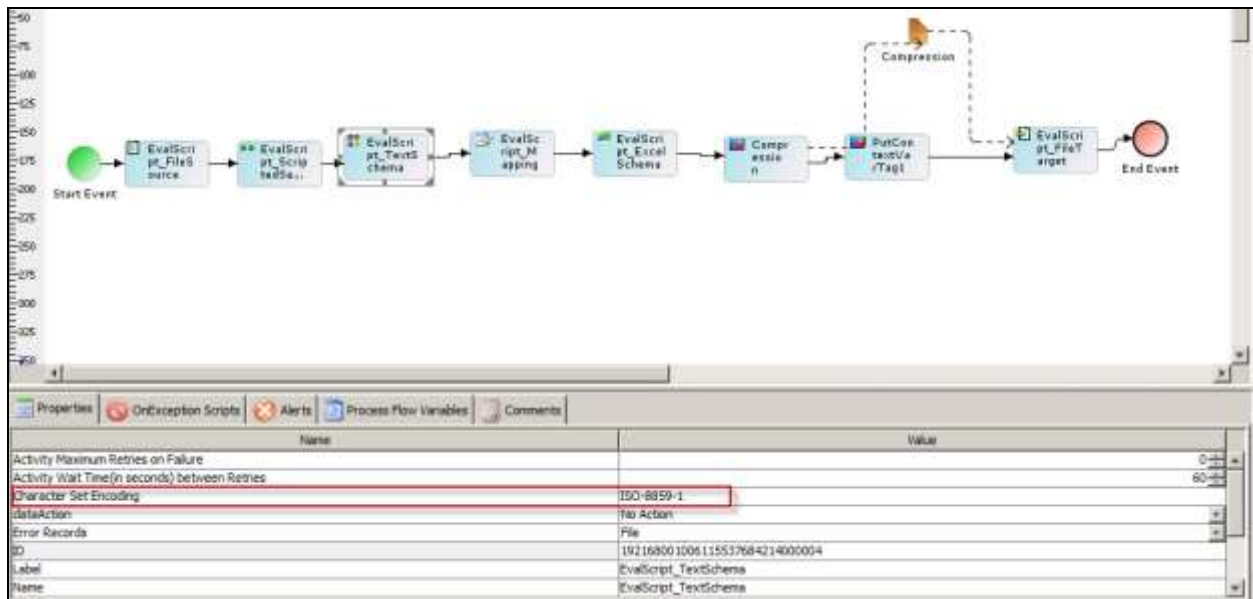
Figure 749: Edit Activity Properties

2.   Change the property Character Set encoding to the required Character Set Encoding.

3.   Save the Process Flow.

By default, the character set encoding at the activity level is set to **None**.

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