Oracle® Communications Design Studio

Modeling Activation

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Contents

Preface

This Help describes how to model activation in Oracle Communications Design Studio.

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1

Getting Started with Design Studio for ASAP

Oracle Communications Design Studio for ASAP has two components (Activation and Service Request Translation) that enable you to create, assemble, and deploy services across multiple domains to production, test, and development environments.

You can model voice services (including wireless, voice over IP), data services (including digital subscriber line, IPTV), or any other services that require controlled and coordinated activation in the network.

See the following topics:

- About Design Studio for ASAP Users and Tasks
- Configuring Activation Network Cartridge Projects
- Configuring Activation Service Cartridge Projects
- Activation Preferences Page

About Design Studio for ASAP Users and Tasks

The following table lists the roles and the tasks each role typically performs in Oracle Communications Design Studio for ASAP.

Role	Task	Reference
Cartridge Designer	Setting up an Activation Network cartridge project	Creating New Activation Cartridge Projects
Cartridge Designer	Defining and editing elements (service actions, atomic actions, action processors)	• Creating Service Actions, Atomic Actions, and Action Processors • Creating Activation Run-Time Type Parameters in the Data Dictionary • About Service Action, Atomic Action, and Action Processor Relationships
Cartridge Designer	Defining relationships between elements	• About Service Action, Atomic Action, and Action Processor Relationships • Generating Framework Models
Solution Designer	Load (import) cartridge projects	• Importing Projects • Importing Activation Cartridges from SAR Files • Importing Cartridge Projects from Environments

Role	Task	Reference
Solution Designer	Setting up an Activation Service cartridge project	Creating New Activation Cartridge Projects
Solution Designer	Designing a service model	• About Vendor, Technology, and Software Load-Specific Service Models • About Common Service Models • About Common Service Models • Creating Service Actions, Atomic Actions, and Action Processors • Creating Activation Run-Time Type Parameters in the Data Dictionary • About Service Action, Atomic Action, and Action Processor Relationships • Generating Framework Models
Solution Designer	Extending user-defined exit types	See *ASAP Cartridge Development Guide*
Solution Designer	Creating custom action processors	Creating Custom Action Processors
Solution Designer	Configuring network elements	Working with Network Elements
Solution Designer	Build, deploy, and undeploy to or from development environments	Packaging and Deploying Activation Cartridges
Developer	Developing the implementation	• About Action Processors • Working with User-Defined Exit Types • Working with Java NE Connection Handlers
Developer	Configuring sample network elements	Working with Network Elements
Developer	Build, deploy, and undeploy to or from development environments	Packaging and Deploying Activation Cartridges
Release Engineer	Build, deploy, and undeploy to or from test and production environments	Packaging and Deploying Activation Cartridges

Configuring Activation Network Cartridge Projects

To configure an Activation Network cartridge project:

1. Create and set up the Activation Network cartridge project.

Double-click the cartridge project entity to display the project in the Activation Project editor.

2. Define and edit the data elements.

   a. Create service actions, atomic actions, action processors, and activation run-time parameters as data elements for the model. See "Creating Service Actions, Atomic Actions, and Action Processors" and "Creating Activation Run-Time Type Parameters in the Data Dictionary" for more information.

      You can create elements with a wizard or with the Cartridge Generation feature, which creates and links the elements. See "Generating Framework Models" for more information.

   b. Do any one of the following:

      For elements that you created with a wizard, define their relationships by manually linking service actions, atomic actions, and action processors, and define the element parameters.

      For elements that you created with the Cartridge Generation feature, the linking process is automated, and elements are automatically created and linked.

      See "About Service Action, Atomic Action, and Action Processor Relationships" for more information.

   c. Add information that will be used for auto-generation of documentation for the model.

      See "Documenting Cartridges" for more information.

3. Implement the action processor.

   a. Define a Java action processor implementation.

      Use the **Java with code generation** implementation to write the logic in the execute method of the processor class (the proxy automatically performs several steps of code generation). See *ASAP Cartridge Development Guide* for more information.

      Configure Java libraries. See *ASAP Cartridge Development Guide* for more information.

   b. Use the Unit Test procedure to generate a test case, which enables you to test the processor outside of the ASAP environment.

      Configure a Unit test for the processor. See "Testing ASAP Cartridges in Design Studio".

4. Configure the user-defined exit types (UDET). See "Configuring User-Defined Exit Types" for more information.

   a. Create UDETs as elements for the model.

   b. Configure the UDETs in the editor to define the content.

5. Implement the connection handler.

   Write a Java Connection Handler. See *ASAP Cartridge Development Guide* for more information.

6. Define the network elements.

   You must create and configure at least one of the following elements (all three elements are related as they involve connection to equipment):

- NE templates

  A template that can be copied to create one or many specific network elements.

- Network elements

  A network element represents one specific piece of equipment (a single instance) in the network. A connection pool contains one or more connections that can be used to connect to the network element (possibly simultaneously). Each network element has a single connection pool associated with it.

- Dynamic NE templates

  Use dynamic NE templates to enable network element attributes to be dynamically sent to ASAP 5.x on work orders. Dynamic NE templates are used when upstream systems (such as Inventory) contain the necessary information to connect to the network element instance. Passing this information to ASAP 5.x dynamically avoids having to configure it in multiple locations (for example, in ASAP 5.x as well as in an inventory system).

See "Working with Network Elements" for more information.

7. Package the cartridge project.

   a. Use the Project editor to specify which elements to include in the cartridge project SAR file.

   b. Create the JAR with ANT.

   c. Include JARs in the SAR.

   d. Put external JARs in the NEP classpath on the ASAP server.

   See "Packaging Projects" for more information.

8. Deploy the cartridge project.

   a. Create a Studio Environment project and a Studio environment in the Studio Projects view (use corresponding wizards for both the tasks).

   b. On the **Connection Information** tab of the Studio Environment editor, specify how to connect to the activation environment. See "Studio Environment Editor Activation Connection Details Area" for more information.

      The NEP Map editor and Activation Test case utility use the information specified in the Activation Connection Details area to deploy network element configuration and to submit test work orders to a run-time ASAP environment respectively.

   c. In the Cartridge Management view, deploy cartridge projects to the run-time environment, and undeploy them from the run-time environment.

   d. Use the NEP Map editor to deploy and manage network elements.

   See "Deploying Cartridge Projects" for more information.

Configuring Activation Service Cartridge Projects

To configure an Activation Service cartridge project:

1. Import the Activation Network cartridge projects that contain the entities you need for your Service cartridge project.

See "Importing Projects", "Importing Activation Cartridges from SAR Files", and "Importing Cartridge Projects from Environments" for more information.

2. Create an Activation Service cartridge project.

   Double-click the cartridge project entity to display the project in the Activation Project editor. See "Creating New Activation Cartridge Projects" and "Activation Project Editor" for more information.

3. Design the service model.

   a. Determine what type of service model you need.

      Options are:

      The vendor, technology and software load-specific service model. See "About Vendor, Technology, and Software Load-Specific Service Models" for more information.

      The common service model. See "About Common Service Models" for more information.

      The mixed service model. See "About Mixed Service Models" for more information.

   b. Create elements for the service model.

      You can create service actions with a wizard or with the Cartridge Generation feature. You can create the necessary atomic actions with a wizard (this is called a common service model) or use atomic actions from imported Activation Network cartridge projects (this is called a mixed service model). See "Creating Service Actions, Atomic Actions, and Action Processors" and "Generating Framework Models" for more information.

   c. Define the relationship between model elements by linking them manually and defining their parameters.

      See "About Service Action, Atomic Action, and Action Processor Relationships" for more information.

4. Extend the user-defined exit types.

   See "Configuring User-Defined Exit Types" for more information.

5. Create custom action processors.

   See "Working with Custom Action Processors" for more information.

6. Configure network elements.

   a. Define a network element.

      A network element represents one specific piece of equipment (a single instance) in the network. A connection pool contains one or more connections that can be used to connect to the network element (possibly simultaneously). Each network element has a single connection pool associated with it. See "About Network Elements" for more information.

   b. Define a dynamic NE template.

      If you do not intend to configure static network element instances for a specific customer solution, you can configure dynamic NE templates to allow network element attributes to be dynamically sent to ASAP 5.x on work orders. Dynamic NE templates are used when upstream systems (such as Inventory) contain the necessary information to connect to the network element instance. Passing this information to ASAP 5.x dynamically avoids having to configure it in multiple locations (for example, in ASAP 5.x as well as in an inventory system). See "Creating NE Templates" for more information.

7. Package the cartridge project.
   a. Use the Project editor to specify which elements will be included in the cartridge project SAR file.

      If the service model you have created depends upon elements in an Activation Network cartridge project it is also necessary to specify which elements of the Activation Network cartridge project should be deployed. Deselect any elements that are not required in the dependent cartridge project.
   b. Create the JAR with ANT.
   c. Include JARs in the SAR.
   d. Put external JARs in the NEP classpath on the ASAP server.

   See "Packaging Projects" for more information.
8. Deploy the cartridge project.
   a. Create a Studio Environment project and a Studio environment in the Studio Projects view (use corresponding wizards for both the tasks).
   b. On the **Connection Information** tab of the Studio Environment editor, specify how to connect to the activation environment. See "Studio Environment Editor Activation Connection Details Area" for more information.

      The NEP Map editor and Activation Test case utility use the information specified in the Activation Connection Details area to deploy network element configuration and to submit test work orders to a run-time ASAP environment respectively.
   c. In the Cartridge Management view, deploy cartridge projects to the run-time environment, and undeploy them from the run-time environment.
   d. Use the NEP Map editor to deploy and manage network elements.

   See "Deploying Cartridge Projects" for more information.

Defining Design Studio for Activation Preferences

To define Design Studio for activation preferences:

1. From the **Window** menu, select **Preferences**.

   The Preferences dialog box appears.
2. In the left-column menu tree, expand the **Oracle Design Studio** folder.
3. Click **Activation Preferences** and define preferences for Design Studio for ASAP.
4. When finished, click **Apply**.
5. Click **OK**.
6. Clean and rebuild the projects in the workspace.

Related Topics

Activation Preferences Page

Defining Preferences

Activation Preferences Page

Use the Activation Preferences page to define preferences specific to Design Studio for ASAP.

Field	Use
Allow NE Template Deployment	Select to generate artifacts for NE templates and package them in the SAR file. You must enable this option for NE Templates to appear as an available option in the Activation Project editor **Packaging** tab.
Service Model Package Format	Specify how the XML files are generated when the activation cartridge project is built. Select one of the following: • **Single file per type** to package all of the service actions into the **cartridgeBuild/ServiceModel/CommonService.xml** file and to package all of the atomic actions into the **cartridgeBuild/ServiceModel/AtomicService.xml** file. • **Single file per instance** to create separate XML files for each of the atomic actions and service actions in the **cartridgeBuild/model** directory.
Complex Type Delimiter	Enter the character to use to separate the parent and child elements of a **scalars** run-time type parameter. Use a: • period (**.**) • hyphen (**-**) • underscore (**_**) See "Grouping Scalar Parameters using Structured Elements" for more information about scalars parameters.
Allow CSDL Label Overwrite	Select to overwrite the CSDL labels (the **Service Action Label** field) for data schema elements. The **Service Action Label** field is available on the **Activation** tab of the data schema element. By default, this option is not enabled and the **Service Action Label** field is read-only and contains the same value as the **Atomic Action Label** field.
CSDL Primitive Type Merge Diagnostic Level	Specify the diagnostic level to use when Design Studio is unable to resolve a primitive type merge for data elements. For example, if two or more atomic actions are using the same data element name with a different type, and both are contributing to a single CSDL, Design Studio attempts to resolve the primitive type merge for the data element in the CSDL. If Design Studio is unable to resolve the merge type, it diagnoses the issue as either an error or a warning. Do one of the following: • Select **Error**. • Select **Warning**. The diagnostic message is displayed in Design Studio **Problems** view.

Field	Use
Index Parameters Default Suffix	When working with indexed type parameters, do one of the following: • Disable this option to use the CSDL label suffix that is defined in the Project editor **Locations** tab **Indexed Parameter Identification Token** field. • Enable this option to define the CSDL label suffix as **++** (**No Brackets**) in the generated **ASDL.xml** file, for all projects in the workspace. When this option is enabled, Design Studio ignores the value defined in the Project editor **Locations** Tab **Indexed Parameter Identification Token** field.

Related Topics

Defining Design Studio for Activation Preferences

Defining Preferences

Activation Project Editor Locations Tab

2

Working with Activation Cartridge Projects

Oracle Communications Design Studio enables you to create Activation cartridge projects or import cartridge projects and modify them.

See the following topics:

- About Design Studio for Activation Projects
- Creating New Activation Cartridge Projects
- Importing Activation Cartridge Projects
- Activation Project Editor

About Design Studio for Activation Projects

Design Studio supports three types of Activation cartridge projects:

- Activation Network cartridge projects

  See "About Activation Network Cartridge Projects" for more information.
- Activation Service cartridge projects

  See "About Activation Service Cartridge Projects" for more information.
- Activation SRT cartridge projects

  See "Creating ASAP SRT Cartridge Projects" for more information.

Additionally, an Environment perspective is required for deployment of all Activation cartridge projects.

About Activation Network Cartridge Projects

You can create Activation Network cartridge projects in Design Studio to support a single type of network equipment (for example, for a DMS-100 switch), or you can import existing cartridge projects into Design Studio and modify those projects. You configure Activation Network cartridge projects for a single vendor, technology, and software load. You can create Activation Network cartridge projects and subsequently deliver them to solution teams, who can use the Activation Network cartridge project components to create customer-specific service models.

Related Topics

Creating New Activation Cartridge Projects

Importing Activation Cartridge Projects

Activation Project Editor

About Activation Service Cartridge Projects

You develop Activation Service cartridge projects to create a service model that can activate services on different types of network equipment. Activation Service cartridge projects include service actions and atomic actions that lack one or more of the vendor, technology and software load tokens. Modelers can use elements of Activation Network cartridge projects in Activation Service cartridge projects for implementation when creating common service models.

You can purchase and import Activation Network cartridge projects when building one or more Activation Service cartridge projects that link down into components within network cartridge projects and that are specific to an offered service. Service cartridge projects incorporate the many different types of equipment used to set up and provide telephony services.

You can use Activation Service cartridge projects to create customer-specific service models. These cartridge projects can contain customer-specific service modeling elements and links to elements in other cartridge projects. While an Activation Network cartridge project always has the three associated attributes (a vendor, such as Ericsson; a technology, such as DMS; and a software load, which references the release number), an Activation Service cartridge project does not necessarily contain all these attributes. Activation Service cartridge projects have elements that generally span multiple types of vendor equipment, can run multiple software loads, and may or may not include one or more of the Activation Network cartridge project attributes.

When creating an Activation Service cartridge project, there are two required attributes that you must specify: a service attribute (for example, Prepaid) and a Domain attribute (for example, Mobile).

Related Topics

Creating New Activation Cartridge Projects

Importing Activation Cartridge Projects

Activation Project Editor

About Cartridge Project Upgrades

When legacy cartridge projects, developed using earlier Design Studio versions, are imported into Design Studio or when the workbench is loaded, the projects are upgraded to the new project format. The new project format is incompatible with earlier Design Studio for Activation versions. The conversion is one-way using the Design Studio Platform's Project Upgrade wizard. See *Design Studio Installation Guide* for more information.

Design Studio's project upgrade logic is responsible for identifying and orchestrating the conversion of interdependent projects. Where several projects with interdependencies need to be converted, the Design Studio Platform upgrade logic performs the conversion in a correct order. For example, an SRT project that depends on an Activation Service project, which depends on an Activation Network project, will first convert the Activation Network project, then the Activation Service project then the SRT project.

Creating New Activation Cartridge Projects

You can use the New Studio Activation Cartridge Project wizard to set up Activation Network and Activation Service cartridge projects and to specify cartridge project attributes (vendor, technology, and software load). After you create the cartridge project, you can add additional details using the Project editor.

To create Activation cartridge projects:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, then select **Project**, and then select **Activation Cartridge Project**.

   The New Studio Activation Cartridge Project wizard appears, displaying the Activation Cartridge Info dialog box.
3. In the **Project name** field, enter a name for the project.
4. (Optional) Select a location for the project.

   By default, Oracle Communications Design Studio saves the project to your default workspace location. To identify a location different from the system-provided default:

   a. Deselect **Use default location**.

   b. Click B**rowse.**

   c. Navigate to the directory in which to save the project.

   d. Click **OK.**
5. In Studio Settings, for **Cartridge Type**, select **Activation Network Cartridge** or **Activation Service Cartridge**, as appropriate.
6. Select the appropriate target version, and enter the package name.
7. Click **Next**.

   The Cartridge Details dialog box appears.
8. Do any one of the following:
   - For Activation Network cartridge projects, specify the vendor, technology and software load attributes for the cartridge.

     When specifying vendors, for example, you might use its stock symbol, such as ERIC (for Ericsson). Examples of technology include HLR (home location register) and DMS (digital multiplex system). You might represent software loads with the release number and dash combination, such as R11-0.
   - For Activation Service cartridge projects, specify the service and domain attributes for the cartridge.

     Examples of services:

     Service: Prepaid Domain: Mobile, Service: Postpaid Domain: Mobile, Service: Residential Domain: POTS, Service: VPN Domain: IP.
9. (Optional) Click **Next**.

   The Create Default Routing Schema dialog box appears. The dialog box appears when for the first time an Activation cartridge project is created in a workspace.

A default Data Dictionary containing default routing parameters is created. For example, a default routing parameter like ID_ROUTING for ID Routing type.

10. (Optional) Click **Next**.

    You can modify the Java configuration in the Java Settings dialog box. For example, you can add libraries in the **Libraries** tab (you can decide to change the configuration later).

    If you modified the Java settings, click **Finish** to save changes and complete the cartridge project.

11. Click **Finish**.

    A new Activation Network cartridge project or Activation Service cartridge project appears in the Studio Projects view. The project contains an entity that represents the network cartridge and also has a Documentation group (which provides access to the Cartridge Guide generation feature for documenting the completed cartridge). See "Documenting Cartridges" for more information. Along with the Activation Network cartridge project or Activation Service cartridge project, an ActivationRoutingDictionary project is also created in the view.

Related Topics

Activation Project Editor

About Activation Network Cartridge Projects

About Activation Service Cartridge Projects

Importing Activation Cartridge Projects

You can import data from an external source into Design Studio workspace or load earlier versions of cartridge projects with legacy data definitions. This allows you to utilize the imported data or components and modify based on requirement.

When importing Activation cartridge projects into Design Studio, see the following topics:

- About Imported Activation Cartridge Projects
- Importing Activation Cartridges from SAR Files
- Importing Cartridge Projects from Environments

About Imported Activation Cartridge Projects

You can import Activation Cartridge projects from an external source into your Design Studio workspace. For example, if you have purchased cartridges from Oracle, you can import them into Design Studio and reuse their components when you build Activation Service cartridge projects. Also, you can load data directly from an Oracle Communications ASAP environment. This approach is useful when you want to obtain a complete snapshot of all the data in an ASAP environment.

Design Studio for Activation supports loading of earlier versions of cartridge projects with legacy data definitions (that do not use the Data Dictionary). The legacy data definitions are migrated during import into a design time Data Dictionary that contains all of the data definitions within a single Data Dictionary file.

After importing an existing licensed cartridge, Design Studio requires that you specify where to store the Data Dictionary content for the cartridge project. Select one of the following locations:

- The Activation project associated with the existing licensed cartridge
- A specified project (a new project that you create for the Data Dictionary or an existing project)

Note:

An existing Activation cartridge that is imported, modified, and exported using the latest version of Design Studio is importable in earlier versions of Design Studio. This enables modifications to legacy cartridges using the latest version of Design Studio.

You can use the following methods to import data into your Design Studio workspace:

- Import from a cartridge project. See "Importing Projects" for more information.
- Import from a SAR file. See "Importing Activation Cartridges from SAR Files" for more information.
- Import from an ASAP environment. See "Importing Cartridge Projects from Environments" for more information.

You import Activation Network cartridge projects (from a location outside of your workspace) to set up your workspace. You can import cartridge projects in a zipped (ZIP or TAR files) or unzipped format.

You can import several network cartridges into the workspace to utilize their components (such as atomic actions, action processors, and NE templates) when setting up Activation Service cartridge projects. Also, you can import a service cartridge project to use as a starting point and modify the project as needed.

You can import one or more network cartridges into the workspace (instead of building them from scratch) to use as starting point for creating new cartridges (for example, to make minor changes to cartridges for the next release) or to compare with other cartridges. See "Creating New Activation Cartridge Projects" for more information about creating new cartridges.

Note:

To import cartridges into your workspace, you can zip up cartridge projects in ZIP or TAR format and export them to an archive file. This method produces a snapshot of the entire workspace as originally created (including one or multiple environments and SAR file) and includes any custom artifacts.

This method is useful when you have a project that contains a complex configuration with multiple dependencies between cartridges (for example, one or more Activation Service cartridge projects that depend on one or more Activation Network cartridge projects).

While it is possible to manually recreate the configuration by importing each of the SAR files from the original cartridges, some data loss may occur if you have custom artifacts that were not included in the original SAR file.

Note:

To obtain Activation Network cartridge projects from Oracle, you can retrieve individual SAR files from the portal and import them into Design Studio. Each cartridge is self-contained (no dependencies exist).

Importing Activation Cartridges from SAR Files

A SAR file is one method for storing an ASAP configuration within a single artifact. Import cartridges from SAR files when you want to load into Design Studio cartridges that have been packaged in a SAR file. For example, when new Oracle Activation Network cartridge projects are available, they are packaged into a SAR file and posted to the portal in a zipped format (TAR file) for download. You can download the TAR file, then extract the SAR file from the TAR file.

Additionally, when you build a new Activation Service cartridge project, Design Studio generates a SAR file. When you have finished creating the service model, you can email the SAR file to another Design Studio user for import or check it into a source control system.

Note:

Importing activation cartridges from deployable archive (SAR) files using the Activation Archive Import Wizard creates an activation project that has only limited information compared to what was available when the cartridge was originally built. Oracle recommends that you distribute and deploy Design Studio Projects rather than SAR files.

If you want to make changes to activation cartridges that you imported from deployable archive (SAR) files using the Activation Archive Import Wizard, then you must also manually copy the **build.xml** file to the **src/** directory.

To import a cartridge from a SAR file:

1. From the **File** menu, select **Import**.

   The Import-Select dialog box appears.
2. Select **Oracle Communications Design Studio Wizards**, then select **Activation Archive (SAR)** and click **Next**.

   The Activation Archive Import Wizard appears in both the cases.
3. In the Activation Archive Import Wizard, click **Browse** to search for a SAR file that contains the network cartridge you need to create your service cartridge.

   After you select a SAR file, the fields in the wizard populate automatically for your cartridge.
4. Click **Next**.

   Cartridge projects that were created in Design Studio populate the **Cartridge Type** field automatically with the correct type (this is a non-editable field).

   Note:

   For cartridge projects not created in Design Studio, you must select the type of cartridge project you are importing.
5. Click **Next**.

   The names of the two data schema entities (one entity for simple data elements and one entity for data structures) to which all the atomic action parameters of this cartridge project are added appear.
6. (Optional) Select the location of the data schema entities.

   Note:

   The default location of the data schema entities for the cartridge project is the cartridge project that is being imported.
7. Click **Finish** to start the import.

   A new Activation Service cartridge project appears in the Studio Projects view.

Note:

Before working with an imported cartridge project, see "Importing Activation Cartridge Projects" for more information about read-only statuses and working with sealed and unsealed cartridge projects.

Related Topics

Importing Activation Cartridge Projects

Activation Project Editor

Importing Cartridge Projects from Environments

If you have an existing ASAP implementation, you can point Design Studio at an ASAP environment and import the configuration (service model, JAR files, and network elements) contained in that environment. This feature eliminates the need to manually run scripts that extract data from an environment into a SAR file and import that SAR file into Design Studio.

You can use this feature to obtain a snapshot of an environment configured from multiple sources, such as insert scripts, XML, or multiple Design Studio instances. In this scenario, it is possible to load the service model and network element configuration into Design Studio directly from an ASAP environment.

Additionally, importing from an existing ASAP environment is useful when you have just begun using Design Studio as a service modeling tool and you have an existing ASAP implementation.

To import a cartridge project from an environment:

1. From the **Studio** menu, select **Show Environment Perspective**.

   The Cartridge Management editor opens.
2. In the Environment view, select a Design Studio environment.
3. In the Cartridges area, click **Query**.

   The Test Environment Connection dialog box appears.
4. Enter the Cartridge Management web service user name and password and click **OK**.

   You are now connected to the environment on which ASAP is running. In the Cartridges area, the list of cartridge projects is refreshed.
5. Select a cartridge project.

   In the Deployed Versions area, the deployed versions of this cartridge project are available.
6. Select a deployed version and click **Import**.
7. Click **Finish**.

Related Topics

Importing Activation Cartridge Projects

Cartridge Management View

Activation Project Editor

Activation Project Editor

Use the Activation Project editor to configure the cartridge project specifications and parameters. In the Studio Projects view, double-click the Project entity to open the Activation Project editor.

Note:

- Network elements and environments for ASAP are not defined in Activation cartridge projects.
- Activation cartridge projects are also Java projects (built on functionality of Java project). Java development can be done inside Activation cartridge projects; you do not need a separate Java project for development.
- Eclipse online documentation for Java projects (including configurations, properties, and settings) also applies to the Java configuration of an Activation cartridge project. See Eclipse online documentation when setting up a cartridge project.

See the following topics:

- Activation Project Editor Blueprint Tab
- Activation Project Editor Properties Tab
- Project Editor Dependency Tab
- Project Editor Tag Tab
- Activation Project Editor Cartridge Layout Tab
- Project Editor Packaging Tab
- Activation Project Editor Locations Tab
- Activation Project Editor Testing Tab
- Project Editor Copyright Tab
- Activation Project Editor Command Structure Tab

Activation Project Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation of the project, including cartridge project properties, service actions, atomic actions, action processors, connection handlers, and network element configuration (for network cartridge projects) or service configuration (for service cartridge projects). This tab is read only.

Related Topics

Activation Project Editor

About Activation Network Cartridge Projects

About Activation Service Cartridge Projects

Activation Project Editor Properties Tab

Use the **Properties** tab to configure cartridge project properties and network element details. See "Project Editor Properties Tab" for more information about fields in this tab that are not specific to ASAP.

Note:

In Activation, the **Default** field is not applicable.

Field	Use
Cartridge Type	Displays the cartridge project type (**Activation Service Cartridge** or **Activation Network Cartridge**) selected on the New Studio Activation Cartridge Project wizard.
Vendor, Technology, and **Software Load**	Displays as specified in the New Studio Activation Cartridge Project wizard. In case of a new network element version you can change the vendor, technology, and software load. This allows you to reuse the cartridge project.
Supported Hardware Models	Specify which network elements the cartridge supports.

Related Topics

Activation Project Editor

About Activation Network Cartridge Projects

About Activation Service Cartridge Projects

Activation Project Editor Cartridge Layout Tab

Use the **Cartridge Layout** tab to generate a framework model for a network or service cartridge project.

For Activation Network cartridge projects, this tab enables you to generate a framework model, which creates a service action, atomic action and an action processor for any combination of action and entity and creates the appropriate association for the three elements in a 1:1:1 relationship.

For Activation Service cartridge projects, this tab enables you to generate service actions. You can create a service model that is appropriate for a specific customer.

Field	Use
Add	Click to add action names and description in the cartridge project. For example, ADD, MOD, DEL, or QUERY.
Remove	Click to clear action names and description from the cartridge project.
Add	Click to add entities, which are related to actions, and their description in the cartridge project. For example, SUBSCRIBER, GSM-SUBSCRIBER, ROUTE, TRUNK, or LINE.
Remove	Click to clear entities from the cartridge project.
Generate Cartridge	Click to generate a framework model for a network or service cartridge project. The framework model is based on a combination of actions and entities. See "Generating Framework Models" for more information about framework models.

Related Topics

Activation Project Editor

About Activation Network Cartridge Projects

About Activation Service Cartridge Projects

Activation Project Editor Locations Tab

Use the **Locations** tab to define default naming and code generation values and to verify or change project directory locations.

Note:

- If you change the ASAP version in the **Locations** tab to a version different than the version you selected during cartridge project creation, you must also update all dependent JAR files, such as **asaplibcommon.jar, JInterp.jar, Studio_2_6_0.jar,** and any other related JAR files. These files are required when the cartridge project depends on third-party libraries. Additionally, you must delete any generated code. Lastly, you must perform a clean and full build to regenerate the code.
- Design Studio uses the default implementation package name as a prefix for generated code. Oracle recommends that you accept defaults and follow recommended naming conventions for all entities that you create.

Field	Use
Project Directories area	Displays the project directory locations. You can edit these locations, as necessary.
Default Naming area	Displays the default name of the generated SAR file. You can edit this name, as necessary.
Code Generation area	Enter the following information: • In the **Indexed Parameter Identification Token** field, identify the CSDL label suffix pattern for indexed type parameters. Design Studio ignores this setting if you enable the **Index Parameters Default Suffix** option on the Activation Preferences page. See "Activation Preferences Page" for more information. • In the **Indexed Parameter Delimiter** field, enter the character that Design Studio uses to separate indexed parameters when generating code. • In the **Compound Parameter Identification Token** field, define the logic that Design Studio generates to read the compound parameters format.

Related Topics

Activation Project Editor

About Service Action, Atomic Action, and Action Processor Relationships

Activation Project Editor Testing Tab

Use the **Testing** tab to view ASAP test cases that you created for your projects and run them individually or simultaneously.

Field	Use
Environment	Select a run-time environment that has configuration for an ASAP environment.
Include all from Project	Select to include all test case entities.
Entity	Displays activation test case entities.
Status	Displays the status of a work order.
Run All	Click to execute all test cases one by one in the run-time environment.
Separate Console for each Test Case	Select to open a different console window for each test case in a run-time environment.
Select	Click to add a test case entity from the project.
Open	Click to open a specific test case entity.
Remove	Click to clear a specific test case entity from the **Testing** tab.
Run	Click to execute a specific test case.

Related Topics

Activation Project Editor

About Activation Network Cartridge Projects

About Activation Service Cartridge Projects

Activation Project Editor Command Structure Tab

Use the **Command Structure** tab to define the default CLI request structure for CLI action processors in the **Request** tab. Except for the **Command Auto-Parsing check** box, the fields in the following table can take one of the values described in the subsequent table:

Field	Use
Command Auto-Parsing	Select to enable automatic parsing of the CLI commands you enter for all new action processors. If not selected, you must manually parse the commands.
Header Body Separator	Defines the separator between the header and the rest of the CLI command.
Parameter Separator	Defines the separator between parameters.

Field	Use
Parameter Name-Value Separator	Defines the separator between a parameter and its value.
Compound Parameter Encloser	Defines the separator that encloses compound parameters.
Compound Parameter Index Separator	Defines the separator between members of a compound parameter.
Command Tail	Defines the character at the end of the CLI command.
End of Command Control Character	Defines the command control character or string at the end of the CLI command: for example, a carriage return or a line-feed character.

The following table describes the field values in the **Command Structure** tab.

Value	Use
NONE	Select if the CLI command does not use the element.
: COLON	Select if the element should be a colon.
, COMMA	Select if the element should be a comma.
. DOT	Select if the element should be a period.
= EQUAL	Select if the element should be the equals sign.
; SEMI_COLON	Select if the element should be a semicolon.
SPACE	Select if the element should be a space.
CARRIAGE	Select if the element should be a carriage return.
NEW LINE	Select if the element should be a new line.
Ctrl+C	Select if the element should be the Ctrl+C key combination.
OTHER	Select if the element requires one or more characters not specified in this list. When selected, a field appears next to the list in which you enter one or more special characters. For example, if the **End of Command Control Character** is the word COMMIT, you could specify this using the OTHER option.

Related Topics

Activation Project Editor

About Activation Network Cartridge Projects

About Activation Service Cartridge Projects

3

Modeling Activation Cartridge Project Data

Oracle Communications Design Studio enables you to model project data once and share that data across entities in the workspace. For example, you can drag a data from a model project to an Atomic Action entity, or you can drag a structured data element (which can correspond to an entire service action) from the Dictionary view to the data element tree of the order template of an Oracle Communications Order and Service Management (OSM) cartridge project. This enables you to reuse the service action's data model, which is the target data model of an activation task in OSM. See "Modeling Data" for more information.

See the following topics:

- About the Atomic Action Editor Context Menu
- Data Schema Editor Activation Tab

About the Atomic Action Editor Context Menu

The Atomic Action editor context menu contains actions specific to simple and structured data elements. To access these actions, you right-click in the Parameters area in the **Parameters** tab. The context menu options that are available depend on the selection in the area. For example, the list of context menu options that appear when you have a data element actively selected is different from the list that appears when no data element in the area is selected.

Field	Use
Select Simple Element	Add a simple data element to the atomic action entity. See "Adding Existing Simple and Structured Data Elements to Entities" for more information.
Select Structured Element	Add a structured data element to the atomic action entity. See "Adding Existing Simple and Structured Data Elements to Entities" for more information.
Delete	Deletes data elements from the entity.
Move Up and **Move Down**	Repositions a data element in the Parameters area by moving it up or down in the list.
Refactoring	Select to access a menu of options for improving names and locations of the data elements. See "Refactoring Entities and Data Elements" for more information.
Expand	Expands a structured data element to display all child elements of the structure.
Collapse	Collapses a structured data element to hide all child elements of the structure.
Refresh	Refreshes the view.

Related Topics

Atomic Action Editor

Data Schema Editor Activation Tab

Use the **Activation** tab to associate data elements in the Data Dictionary to ASAP run-time type parameters.

The ASAP run-time type parameter values can be configured only at the root-level data elements **Scalar**, **Compound**, **XML**, and **XPath**.

Field	Use
Compound Member Label	Displays the same name as the data element. You can use the compound member in the code generated Java Action Processors (of the Java code) to access the members of the compound parameter. To rename the compound member, select **Rename** from the Data Schema editor context menu. See "About the Data Schema Editor Context Menu" for more information.
Runtime Type	Select any one of the following run-time type parameters in order to associate a data element to an ASAP parameter: **Note:** The specified type will be applied each time the data element is used on the **Parameters** tab of the Atomic Action editor. • **SCALAR:** Conventional name-value pair parameters for simple data elements. • **SCALARS:** Applicable to root-level of structured data elements. The leaf (child) elements become conventional name-value pair parameters. • **COMPOUND:** Contains structures or arrays of information that are represented by a particular structure name or compound parameter name. • **XML:** Used as values for both information parameters and extended work order properties. • **XPATH:** Defines an XPath expression into XML data. Depending on the run-time type parameter, the labels in this tab are visible. See *ASAP Developer's Guide* for more information on parameter types.
Atomic Action Label	Specify a unique name for the run-time type parameter in the atomic action. The default name is the name of the data element.
Service Action Label	Displays the name of the parameter in a service action. The name is unique and is the same as the data element name.
Indexed	Select the check box if you want to index the run-time type parameter.
Data Restrictions	Specify the description of the run-time type parameter that has any restriction on the value of the parameter.
Dependent XML	Displays the path of the XML that defines the parameter. This field is available only for the **XPATH** run-time type parameter.

Related Topics

Atomic Action Editor

Data Schema Editor

4

Modeling ASAP Services

You model ASAP services to develop Activation Network or Activation Service cartridge projects and to provision services. The Cartridge Generation tool enables you to automatically generate a framework model.

The steps you take to model services for an Activation cartridge depend on the type of cartridge (Activation Network or Activation Service) and, when modeling Activation Service cartridges, the type of model (mixed or common).

After you model a service, you can complete the parameter descriptions for entities by opening each editor and providing data (for example, open the Project editor to configure the cartridge and its entities). Also, you can complete any documentation information that needs to be included in the cartridge auto-generated documentation.

See the following topics:

- About Service Models
- Modeling Services for Activation Network Cartridges
- Modeling Services for Activation Service Cartridges
- Working with Service Actions, Atomic Actions, and Action Processors
- Generating Framework Models
- Creating Event Templates
- Documenting Models
- Example 1: Modeling Services
- Example 2: Modeling Services
- Action Processor Editor
- Atomic Action Editor
- Service Action Editor
- Event Template Editor

About Service Models

A service model is a combination of service actions and atomic actions that may or may not be specific to vendor, technology, and software load.

When working with service models, see the following topics:

- About Vendor, Technology, and Software Load-Specific Service Models
- About Common Service Models
- About Mixed Service Models

About Vendor, Technology, and Software Load-Specific Service Models

Vendor, technology, and software load-specific service models are provided out-of-the-box with delivered cartridges. Entities in the service model contain the vendor, technology, and software load tokens and there is a one-to-one relationship (or limited one-to-many relationship) between service actions and atomic actions.

Service models designed in this way enable upstream systems to directly access device-specific operations. Using out-of-the-box service model design preserves simplicity in the Oracle Communications ASAP service model and requires less service modeling work in ASAP. However, it also forces upstream systems, which are required to make selections of service actions based on the vendor, technology, and software loads being activated, to collate service actions together into meaningful work orders. Additionally, vendor equipment changes may create future maintenance.

Note:

When utilizing an out-of-the-box cartridge service model, consider consolidating service actions into meaningful building blocks to avoid pushing additional logic to upstream systems.

Consider the use of cartridge (vendor, technology, and software load-specific) service models when:

- Services are implemented very differently across vendors (for example, use of preconfigured profiles vs. passing of raw parameters to a network element) or next generation services whose standards are evolving (multiple vendors at different phases of support for new technologies, for example, and who have different interface specifications).
- One single type of vendor equipment is present in the network (for example, a specific vendor for HLRs, a specific vendor for voice mail) without future plans to introduce additional vendors into the network.
- Atomic actions are technology oriented (for example, nail up a relay point) rather than service oriented (for example, add a subscriber).
- Significant knowledge of the network infrastructure exists in upstream systems, such as Inventory.
- Highly complex domains (IP-VPN, ATM) with homogeneous networks (for example, Cisco) are used.
- Different activation steps (API calls) are required in order to activate the same services across different vendor equipment.

Lastly, if you have customer-specific parameter values that you want to expose to upstream systems, you can create new atomic actions with customer-specified atomic action parameters defined as defaults. This approach exposes only a subset of the cartridge atomic actions via the service actions. However, to use this variant you must create duplicate service actions and atomic actions with minor differences, which may create maintenance challenges.

Related Topics

Modeling Services for Activation Network Cartridges

Modeling Services for Activation Service Cartridges

About Common Service Models

Common service actions are most often associated with common atomic actions to create a consistently abstract service model (both service actions and atomic actions are common). In common service models one or more of the vendor, technology, and software load attributes are left out of the names of both service actions and atomic actions to indicate that they may be used to activate services on equipment from multiple vendors. ASAP has a built-in mechanism to map common atomic actions to a specific vendor, technology, and software load implementation based on the vendor, technology, and software load of the network element on which the service is being activated (see tbl_nep_asdl_prog for mapping details in the *ASAP Cartridge Development Guide*). For example, a common service action can add a subscriber regardless of whether it is a Nortel DMS 100 (POTS) or a Nortel CS2K (VoIP).

Common service actions map to one or more common atomic actions. The atomic actions map to multiple vendor, technology, and software load-specific implementations allowing for multiple technologies to be activated. The common atomic actions may simply be a renaming of the cartridge atomic actions to exclude one or more of the vendor, technology, software load attributes. In some cases, when a common service model is implemented in which many similar atomic actions across various network elements are required, the technology token must be maintained in the atomic actions to distinguish between the types technologies being activated.

Consider use of common service actions with common atomic actions when:

- There exists a subscriber and service oriented domain where services are implemented uniformly across vendor equipment. Similar activation steps are used to activate similar services uniformly across different vendor equipment.
- Changes may occur to the types of vendor equipment in the network or there is significant churn in the software loads. Limited change to the service model is desired despite changes to the network equipment.
- Inventory systems containing information about the equipment in the network are not available, or little information about the network is stored in upstream systems.

Common Service Model Example

The following wireless example demonstrates how a GSM subscriber is activated on the authentication center (AUC), flexible number routing network element (FNR), voice mail server (VMS) and home location register (HLR). This service model can be implemented to support technologies from many different vendors (for example, Nokia AUC, Ericsson AUC, and so on):

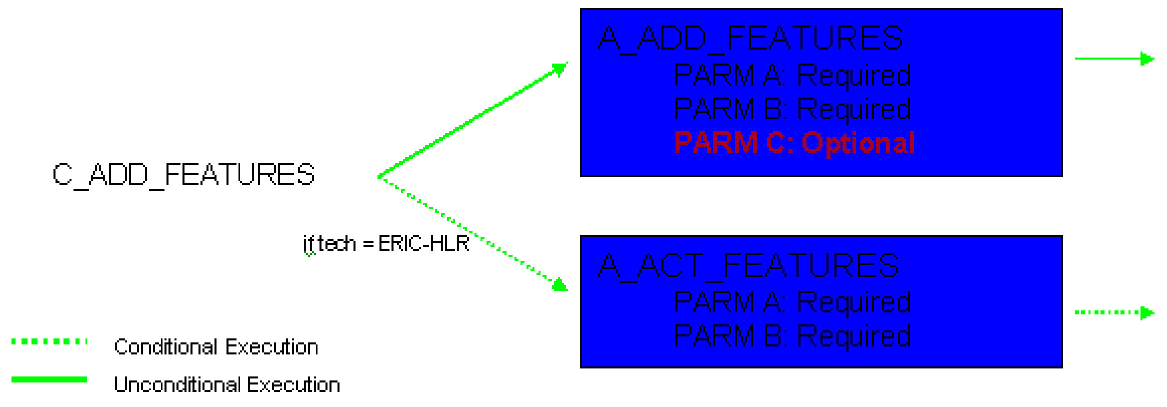
```
C_ADD_GSM-SUBSCRIBER -->
A_AUC_ADD_SUB
A_FNR_ADD_SUB
A_VMS_ADD_SUB
A_HLR_ADD_SUB
```

Common Service Model Challenges

Consider the following challenges when implementing a common service model:

- Different activation steps are required even when implementing simple subscriber oriented features.
- Significant parameter deltas can exist for similar services. For example, one service may require that you configure a subscriber by assigning a preconfigured profile to a subscriber on one network element (which is identified by its profile name); another may require that you configure a subscriber on a network element by passing all the details of the subscriber and services. In this case the atomic action parameters sets are dissimilar.

The following diagram shows an example of the some of the complications that can be involved in using a common service model even when the activating simple services. This example illustrates how to add a feature to a subscriber on an Ericsson HLR by first adding and then activating the feature (these are implemented as separate atomic actions); meanwhile, adding a feature on the Nortel HLR is a single atomic action. In order for a common service model to work in this case, you must configure spawning logic on the activate atomic action so that it does not execute when activating services on the Nortel HLR. The diagram also shows that `PARM C` is needed only when activating a service on the Nortel HLR. Therefore, it must be made optional so that a failure of the atomic action does not result when activating services on the Ericsson HLR (in which case `PARM C` will not be present on the work order).



Note:

While it is ideal to use a common service model, multiple service activation differences on different vendor equipment often result in increased maintenance, complicated spawning logic, and numerous atomic actions per service action if using this method. In such cases, consider implementing logic upstream to select the correct vendor, technology, and software load-specific service actions.

Related Topics

Modeling Services for Activation Network Cartridges

Modeling Services for Activation Service Cartridges

About Mixed Service Models

Mixed service models combine common service actions and vendor, technology, and software load-specific atomic actions, and should be used with discretion when implementing solutions. Common service actions map to multiple vendor, technology, and software load-specific atomic actions.

Consider the use of common service actions with vendor, technology, and software load-specific atomic actions when the same services are implemented differently across different vendor equipment (resulting in many optional atomic action parameters using a common model) and service actions must be agnostic to avoid exposing network specific details to upstream systems. This model requires that spawning logic spawn the correct atomic action.

Note:

When implementing solutions, discard from the cartridges those service actions and atomic actions that are not used. Include in your production environment only those service modeling entities that you intend to use. Unused actions are exposed through the OCA client during fallout management, and may create confusion and unnecessary overhead when starting and stopping the ASAP system.

Related Topics

Modeling Services for Activation Network Cartridges

Modeling Services for Activation Service Cartridges

Modeling Services for Activation Network Cartridges

To model services for an Activation Network cartridge:

1. Create service actions and atomic actions (with the vendor, technology, and software load tokens) and action processors.

   See "Creating Service Actions, Atomic Actions, and Action Processors" for more information.
2. Create Java methods.
3. Associate entities (service actions, atomic actions, action processors, Java methods in a 1:1:1 relationship).

   See "About Service Action, Atomic Action, and Action Processor Relationships" for more information.

> **Note:**
>
> While creating and associating these entities can be done manually, it is more common to use the Cartridge Generation tool for Activation Network cartridges. See "Generating Framework Models" for more information.

Modeling Services for Activation Service Cartridges

You can model services for Activation Service cartridges that use either a common or mixed service model.

To model services for Activation Service cartridges:

1. Create common service actions.

   See "Creating Service Actions, Atomic Actions, and Action Processors" for more information.

2. To model services that use a common service model:

   a. Create common atomic actions. See "Creating Service Actions, Atomic Actions, and Action Processors" for more information.

   b. Associate service actions, atomic actions and action processors from Activation Network cartridges in a 1:many:many relationship (action processors are already linked to Java methods). See "About Service Action, Atomic Action, and Action Processor Relationships" for more information.

3. To model services that use a mixed service model:

   Associate service actions to atomic actions from Activation Network cartridges in a 1:many:1 relationship (atomic actions from Activation Network cartridges are already linked to action processors and Java methods). See "About Service Action, Atomic Action, and Action Processor Relationships" for more information.

   > **Note:**
   >
   > Using the Cartridge Generation tool, you can generate only service actions, you must select which atomic actions (one or possibly more) will be associated with the service actions in the cartridge.

   > **Note:**
   >
   > You may need to create (for all types of Activation Service cartridges), customized action processors and Java methods to implement solution-specific behavior. See "Creating Custom Action Processors" for more information.

Working with Service Actions, Atomic Actions, and Action Processors

When working with service actions, atomic actions, and action processors, see the following topics:

- About Service Action, Atomic Action, and Action Processor Relationships
- About Action Processors
- Creating Service Actions, Atomic Actions, and Action Processors
- Creating Activation Run-Time Type Parameters in the Data Dictionary
- Configuring Service Action, Atomic Action, and Action Processor Properties

About Service Action, Atomic Action, and Action Processor Relationships

When modeling services, you define the relationship among service actions, action processors, and atomic actions. In Activation Network cartridges, you link these entities in a 1:1:1 relationship. In Activation Service cartridges, you link these entities in a 1:1:many or in a 1:many:many relationship.

Note:

In most cases, you will not use the service models created for Activation Network cartridges in customer specific solutions. For Activation Network cartridges, these entities mainly provide a complete service model that can be used to test the cartridge action processors upon cartridge delivery.

See the following topics:

- About Activation Network Cartridge Relationships
- About Activation Service Cartridge Relationships

About Activation Network Cartridge Relationships

You can use the Cartridge Generation tool to generate required service actions, action processors, and atomic actions for any combination of action and entity and to map the entities in the appropriate 1:1:1 relationship. See "Generating Framework Models" for information about the Cartridge Generation tool.

About Activation Service Cartridge Relationships

You can use the Cartridge Generation tool only to generate service actions, as the Cartridge Generation tool cannot determine which atomic actions (one or possibly more) must be spawned for each service action. You create new atomic actions and action processors or select these entities from imported Activation Network cartridge projects. You then map each service action to several atomic actions, each of which need to be mapped to one or more action processors (1:1:many or 1:many:many relationship).

Note:

An atomic action from an imported cartridge is already mapped to one action processor. If you reuse the atomic action from the cartridge, do not change this mapping and do not map additional action processors to the atomic action. An atomic action that you create is not yet linked to other entities (service actions and action processors) and therefore always needs to be mapped. To link action processors to atomic actions, and to link atomic actions to service actions, drag an entity from the Studio Projects view to the mapping tab in the editor of the entity to which you want to link. For example, select an action processor from a cartridge project in your Studio Projects view, then drag the action to the **Action Processor Mapping** tab in the editor of the appropriate atomic action. Similarly, you can drag atomic actions to the **Atomic Action** tab of a Service Action editor.

About Action Processors

For every action processor you must define a processor as the implementation that performs the work. You can use a classic Java implementation or a state table implementation. However, the recommended approach is to implement using Java with code generation. This method provides code that would normally have to be written by developers.

Related Topics

Loading XML String Parameter into XML Related Technologies

Loading XML String Parameter into XML Related Technologies

The autogenerated code produces content in string format for all parameter types including the XML run-time parameter type. However, some network elements require different XML technologies such as document object model (DOM), simple API for XML (SAX), XML beans, and so on. You can create Java code to perform this conversion.

For example, the following sample code loads an XML string parameter into a XML DOM parameter:

```
public Document buildDocumentFromString(String xmlString)
throws Exception
{
try
{
StringReader stringReader = new StringReader(xmlString);

SAXBuilder builder = new SAXBuilder();

Diagnosis.diag(1, this, "Building document for :\n" + xmlString);
Document doc = builder.build(stringReader);
return doc;
}
catch (Exception e) {
String exceptionMessage = "Exception caught : " + e.toString();
Diagnosis.diag(1, this, exceptionMessage);
throw new Exception("XML Error" + exceptionMessage);
}
}
```

Related Topics

About Action Processors

Creating Service Actions, Atomic Actions, and Action Processors

You can create atomic actions, service actions, and action processors when modeling services for an Activation Cartridge project.

Note:

Follow the steps in this procedure to create entities for Activation Service cartridges. After you create the entities, you must link the entities manually. Entities for Activation Network cartridges are usually created and linked with the Cartridge Generation tool.

To create a Service Action, Atomic Action, or Action Processor entity:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, select **Activation**, then select the action entity.

   The Studio Model Entity wizard appears.

   Note:

   The vendor, technology, software load fields of the wizards are non-editable for entities of Activation Network cartridges, but are writable for those of Activation Service cartridges. Activation Service cartridges may contain different types of service models, some of which do not identify a specific vendor, technology, or software-load attribute to indicate that they may be used to activate services on equipment from multiple vendors.

3. Select the applicable project.
4. Enter an action or select a previously defined action from the list (for example, ADD, MOD, DEL, or QUERY).
5. Enter a name for the entity (for example, SUBSCRIBER, GSM-SUBSCRIBER, ROUTE, TRUNK, or LINE).

   An updated name and a location name appears in non-editable fields based on the information in the **Vendor**, **Technology**, **Software Load**, **Action**, and **Entity** fields.

6. (Optional) Select a location for the entity.

   By default, Design Studio saves the entity to your default workspace location. You can enter a folder name in the **Folder** field or select a location different from the system-provided default. To select a different location:

   a. Deselect the **Use recommended name and location** check box.

   b. Click the **Folder** field **Browse** button.

   c. Navigate to the directory in which to save the entity.

   d. Click **OK**.

7. Click **Finish**.

   The new action entity appears in the Project folder in the Studio Projects view.

> **Note:**
>
> You must correct any problem markers on any entities before you deploy the cartridge project. See the Problems view for a short description of existing problems. For best results, set the Problem view filter to **On selected element and its children** to view problems in their full context.
>
> If problem markers seem invalid (for example, if they continue to reappear after you fix the problem in the configuration), you can usually remove these problems by selecting **Project, Clean** from the main menu. Select one or all listed projects and click **OK**. Oracle Communications Design Studio discards all build problems and build states of the selected projects and rebuilds the projects from scratch.

Related Topics

About Activation Network Cartridge Projects

About Activation Service Cartridge Projects

Generating Framework Models

Modeling ASAP Services

Creating Activation Run-Time Type Parameters in the Data Dictionary

You create activation run-time type parameters that can be used in the linked entities in their respective editors (you can also do this before linking the entities).

> **Note:**
>
> If you want to use the automatically generated code (see "Defining Action Processor Properties") and if you want the code to include content that support parameters, you must first create the parameters and associate them to atomic actions (see "Defining Atomic Action Properties") before generating the code.

For more information about activation parameters, see *ASAP Cartridge Development Guide*.

Design Studio supports the following:

- Creating a Scalar Parameter
- Creating a Compound Parameter
- Creating an XML Parameter
- Creating an XPATH Parameter
- Grouping Scalar Parameters using Structured Elements

Creating a Scalar Parameter

Scalar parameters are conventional name-value pair parameters.

To create a mandatory, optional, or indexed scalar parameter:

1. From the **Studio** menu, select **Show Design Perspective**.
2. Click the tab for the Dictionary view.
3. Right click in the Dictionary view and select **Add Simple Schema Element**.

   The Create Data Schema Element wizard appears.
4. Enter the following:
   a. In the **Entity** field, enter the name of the project to which you want to add a scalar parameter.
   b. In the **Name** field, enter an element name.
   c. In the **Display Name** field, enter a display name. The Data Schema editor supports multiple languages for this field. The field adjacent to **Display Name** displays your language. You can define a **Display Name** field value for any language you select from the list. For more information, see Oracle Communications Design Studio Help.
   d. In the Multiplicity field, select one of the following:
      - **Required**: This attribute makes the parameter mandatory.
      - **Optional**: This attribute makes the parameter optional.
      - **Range**: Any ranged parameter with a **Minimum** value greater than 0 is considered a mandatory ASAP parameter. Any ranged parameter with a **Minimum** value of 0 is considered an optional ASAP parameter.
5. Click **Finish**.

   The new parameter appears in the Dictionary view. You may need to expand the schema for your cartridge to see it.
6. Double-click the new parameter to open the Data Schema editor with that parameter selected.
7. Click the **Activation** subtab.
8. From the **Runtime type** list, select **SCALAR**.
9. (Optional) Select **Indexed** to index the parameter.

Related Topics

Creating Service Actions, Atomic Actions, and Action Processors

Configuring Service Action, Atomic Action, and Action Processor Properties

Modeling ASAP Services

Atomic Action Editor

Creating a Compound Parameter

To create a compound parameter:

1. From the **Studio** menu, select **Show Design Perspective**.
2. Click the tab for the Dictionary view.
3. Right click in the Dictionary view and select **Add Structured Schema Element**.

   The Create Data Schema Structure wizard appears.
4. Enter the following:
   a. In the **Entity** field, enter the name of the project to which you want to add a scalar parameter.
   b. In the **Name** field, enter an element name.
   c. In the **Display Name** field, enter a display name. The Data Schema editor supports multiple languages for this field. The field adjacent to **Display Name** displays your language. You can define a **Display Name** field value for any language you select from the list. For more information, see the Oracle Communications Design Studio Help.
   d. In the **Multiplicity** field, select one of the following:
      - **Required**: This attribute makes the parameter mandatory.
      - **Optional**: This attribute makes the parameter optional.
      - **Range**: Any ranged parameter with a **Minimum** value greater than 0 is considered a mandatory ASAP parameter. Any ranged parameter with a **Minimum** value of 0 is considered an optional ASAP parameter.
5. Click **Finish**.

   The new parameter appears in the Dictionary view. You may need to expand the schema for your cartridge to see it.
6. Double-click the new parameter to open the Data Schema editor with that parameter selected.
7. Click the **Activation** subtab.
8. From the **Runtime type** list, select **COMPOUND**.

> **Note:**
>
> All child elements inherit the **Activation** tab attributes from the base compound element.

9. (Optional) Select **Indexed** to index the parameter.
10. Right click the new parameter in the Dictionary view and select **Add Simple Child Schema Element**.

    The Create Data Schema Element wizard appears.

    > **Note:**
    >
    > Compound parameters do not support structured child schema elements.

11. Enter the following:
    a. In the **Name** field, enter an element name.
    b. In the **Display Name** field, enter a display name. The Data Schema editor supports multiple languages for this field. The field adjacent to **Display Name** displays your language. You can define a **Display Name** field value for any language you select from the list. For more information, see the Oracle Communications Design Studio Help.
    c. In the **Multiplicity** field, select one of the following:
       - **Required**: This attribute makes the parameter mandatory.
       - **Optional**: This attribute makes the parameter optional.
       - **Range**: Any ranged parameter with a **Minimum** value greater than 0 is considered a mandatory ASAP parameter. Any ranged parameter with a **Minimum** value of 0 is considered an optional ASAP parameter.
12. Click **Finish**.
13. Repeat steps 10 to 12 for any additional parameters to be included in the compound parameter.

Related Topics

Creating Service Actions, Atomic Actions, and Action Processors

Configuring Service Action, Atomic Action, and Action Processor Properties

Modeling ASAP Services

Atomic Action Editor

Creating an XML Parameter

To create an XML parameter:

1. From the **Studio** menu, select **Show Design Perspective**.
2. Click the tab for the Dictionary view.
3. Right click in the Dictionary view and select **Add Simple Schema Element**.

   The Create Data Schema Element wizard appears.
4. Enter the following:

   a. In the **Entity** field, enter the name of the project to which you want to add a scalar parameter.
   b. In the **Name** field, enter an element name.
   c. In the **Display Name** field, enter a display name. The Data Schema editor supports multiple languages for this field. The field adjacent to **Display Name** displays your language. You can define a **Display Name** field value for any language you select from the list. For more information, see the Oracle Communications Design Studio Help.
   d. In the **Multiplicity** field, select one of the following:
      - **Required**: This attribute makes the parameter mandatory.
      - **Optional**: This attribute makes the parameter optional.
      - **Range**: Any ranged parameter with a **Minimum** value greater than 0 is considered a mandatory ASAP parameter. Any ranged parameter with a **Minimum** value of 0 is considered an optional ASAP parameter.

5. Click **Finish**.

   The new parameter appears in the Dictionary view. You may need to expand the schema for your cartridge to see it.
6. Double-click the new parameter to open the Data Schema editor with that parameter selected.
7. Click the **Activation** subtab.
8. From the **Runtime type** list, select **XML**.

Related Topics

Creating Service Actions, Atomic Actions, and Action Processors

Configuring Service Action, Atomic Action, and Action Processor Properties

Modeling ASAP Services

Atomic Action Editor

Creating an XPATH Parameter

To create an XPATH parameter:

1. From the **Studio** menu, select **Show Design Perspective**.
2. Click the tab for the Dictionary view.
3. Right click in the Dictionary view and select **Add Simple Schema Element**.

   The Create Data Schema Element wizard appears.
4. Enter the following:
   a. In the **Entity** field, enter the name of the project to which you want to add a scalar parameter.
   b. In the **Name** field, enter an element name.
   c. In the **Display Name** field, enter a display name. The Data Schema editor supports multiple languages for this field. The field adjacent to **Display Name** displays your language. You can define a **Display Name** field value for

any language you select from the list. For more information, see the Oracle Communications Design Studio Help.

d. In the **Multiplicity** field, select one of the following:
   - **Required**: This attribute makes the parameter mandatory.
   - **Optional**: This attribute makes the parameter optional.
   - **Range**: Any ranged parameter with a **Minimum** value greater than 0 is considered a mandatory ASAP parameter. Any ranged parameter with a **Minimum** value of 0 is considered an optional ASAP parameter.

5. Click **Finish**.

   The new parameter appears in the Dictionary view. You may need to expand the schema for your cartridge to see it.
6. Double-click the new parameter to open the Data Schema editor with that parameter selected.
7. Click the **Activation** subtab.
8. From the **Runtime type** list, select **XPATH**.
9. (Optional) Select **Indexed** to index the parameter.
10. In the Dependent XML field create or select a dependent XML. This attribute displays the path of the XML file that defines the parameter. This field is available only for the XPATH run-time type parameter.

Related Topics

Creating Service Actions, Atomic Actions, and Action Processors

Configuring Service Action, Atomic Action, and Action Processor Properties

Modeling ASAP Services

Atomic Action Editor

Grouping Scalar Parameters using Structured Elements

You can group ASAP scalar parameters using a structured data element. A structured data element is a container that holds ASAP parameters. The following scalar groups are defined using two levels of structured data elements:

```
Structure element1
     Structure element2
              Scalar1
              Scalar2
Structure element3
     Structure element4
              Scalar3
              Scalar4
```

For example, these structured data elements might be defined as:

```
Person
     Name
         First_name
         Last_name
Place
     Address
```

```
        Number
        Street
```

The structured data elements used in Design Studio are converted into individual ASAP scalar parameters by absorbing the structured data element names into the scalar parameter name. The previous example would appear as follows:

```
Person_Name_First_name
Person_Name_Last_name
Place_Address_Number
Place_Address_Street
```

The default character used to separate the elements in the ASAP parameter names is the underscore (_). You can change this character. See "Activation Preferences Page" for more information.

To group scalar parameters:

1. From the **Studio** menu, select **Show Design Perspective**.
2. Click the tab for the Dictionary view.
3. Right click in the Dictionary view and select **Add Structured Schema Element**.

   The Create Data Schema Structure wizard appears.
4. Enter the following:
   a. In the **Entity** field, enter the name of the project to which you want to add a scalar parameter.
   b. In the **Name** field, enter an element name.
   c. In the **Display Name** field, enter a display name. The Data Schema editor supports multiple languages for this field. The field adjacent to **Display Name** displays your language. You can define a **Display Name** field value for any language you select from the list. For more information, see the Oracle Communications Design Studio Help.
   d. In the **Multiplicity** field, select one of the following:
      - **Required**: This attribute makes the parameter mandatory.
      - **Optional**: This attribute makes the parameter optional.
      - **Range**: Any ranged parameter with a **Minimum** value greater than 0 is considered a mandatory ASAP parameter. Any ranged parameter with a **Minimum** value of 0 is considered an optional ASAP parameter.
5. Click **Finish**.

   The new parameter appears in the Dictionary view. You may need to expand the schema for your cartridge to see it.
6. Double-click the new parameter to open the Data Schema editor with that parameter selected.
7. Click the **Activation** subtab.
8. From the **Runtime type** list, select **SCALARS**.
9. Right click the new parameter in the Dictionary view and select one of the following:

- **Add Simple Child Schema Element**: Select this attribute if you want to immediately define xml or scalar parameters within the first structured element. If you select this option, go to step 10.
- **Add Structured Child Schema Element**: Select this attribute if you want additional structured child schema elements below the first structured element. If you select this option, repeat steps 4 to 9.

10. Enter the following:
    a. In the **Name** field, enter an element name.
    b. In the **Display Name** field, enter a display name. The Data Schema editor supports multiple languages for this field. The field adjacent to **Display Name** displays your language. You can define a **Display Name** field value for any language you select from the list. For more information, see the Oracle Communications Design Studio Help.
    c. In the Multiplicity field, select one of the following:
       - **Required**: This attribute makes the parameter mandatory.
       - **Optional**: This attribute makes the parameter optional.
       - **Range**: Any ranged parameter with a **Minimum** value greater than 0 is considered a mandatory ASAP parameter. Any ranged parameter with a **Minimum** value of 0 is considered an optional ASAP parameter.
11. Click **Finish**.
12. Repeat steps 10 to 11 for any additional parameters to be included in the scalar or XML parameter group.

Related Topics

Creating Service Actions, Atomic Actions, and Action Processors

Configuring Service Action, Atomic Action, and Action Processor Properties

Modeling ASAP Services

Atomic Action Editor

Configuring Service Action, Atomic Action, and Action Processor Properties

You define the properties of service actions, atomic actions, and action processors in their respective editors.

See the following topics:

- Defining Service Action Properties
- Defining Atomic Action Properties
- Defining Action Processor Properties

Note:

If you create compound parameters, Oracle recommends that you define the members for every compound parameter. This is beneficial once the code is generated during implementation. Ensure your parameters are valid Java parameters. See *ASAP Cartridge Development Guide* for more information.

Defining Service Action Properties

To define service action properties:

1. In the Studio Projects view, double-click a service action entity.

   The Service Action editor appears.
2. In the **Description** field, enter a description.
3. Click the **Atomic Action(s)** tab.

   The **Atomic Action(s)** tab enables you to map an atomic action to a service action. Depending on the cartridge model, you can map more than one atomic action to one service action.
4. Click **Add**.

   The Atomic Action Selection dialog box appears.
5. Select an atomic action to which you want to map the service action.

   In the Service Action Details area, a new row with default values appears.
6. Click the row and edit the values in the Atomic Action Conditions area.
7. Click the **Properties** tab and define the properties for the service action.
8. In the **Level** field, enter the sequence level for the service action in the work order.
9. Select or enter values for **Service Action Completion Event** and **Service Action Failure Event**.

   When the service action completes or fails, the respective event is returned.
10. (Optional) To configure rollback for a service action, do the following:
    a. Select the **Rollback** check box.
    b. In the **Atomic Actions** tab, click in the Rollback Point column for the atomic action that you want to set as Point of No Return (PNR).
    c. From the list, select a rollback value.

Note:

- A PNR can be specified only if the service action has rollback enabled with the **Rollback** check box selected in the **Properties** tab.
- If rollback is enabled but not configured in the **Atomic Action(s)** tab, the default behavior is a complete rollback of all atomic actions in a failed work order.

11. Click the **Parameters** tab to see the mapping of a service action and an atomic action. The details of the atomic action are based on the parameters defined on the Atomic Action editor.
12. Click the **Command Overview** tab to see the details of the atomic action and service actions.
13. Select **File**, then select **Save**.

Related Topics

Creating Activation Run-Time Type Parameters in the Data Dictionary

Service Action Editor

Defining Atomic Action Properties

To define atomic action properties:

1. In the Studio Projects view, double-click an atomic action entity.

   The Atomic Action editor appears.
2. In the **Description** field, enter a description for the editor.
3. In the **Details** tab, select a routing support.
4. In the **Parameters** tab, the mandatory parameters for the routing support are automatically added, depending on the routing support you selected, to the Parameters area. In the **Activation** tab, the **Service Action Label** and **Atomic Action Label** are automatically defined for these routing parameters.

   For example, in the **Details** tab if you select **Dynamic Routing**, in the Parameter Details area, you can enter the data restrictions and other details for the parameter.
5. Right-click in the parameters area and select one of the following:
   - If you want to add a scalar, XML, or XPATH run-time parameter, select **Select Simple Data Element** and add a parameter from the activation data dictionary.
   - If you want to add a grouping of scalar parameters or a compound parameter, select **Select Structured Data Element** and add a parameter from the activation data dictionary.

   See "Creating Activation Run-Time Type Parameters in the Data Dictionary" for more information about activation run-time parameters.
6. In the **Mappings** tab, you can map an atomic action to an action processor.
7. (Optional) Click the **Add** button and map an atomic action to any of the existing action processors.

   The Action Processor Selection Dialog dialog box appears. You can add an action processor from the list of existing action processors in workspace.
8. (Optional) On the Action Processor Selection Dialog dialog box, click the **New** button to create a new action processor.

   The Action Processor Wizard appears. You can fill the appropriate fields of this wizard to create a new action processor entity.
9. (Optional) You can do the following:

- Click the **Clone** button to create a copy of the selected action processor.
- Click the **Open** button to open the selected action processor.
- Click the **Remove** button to remove the selected action processor.

10. In the **Details** tab, in the Detailed Information area, provide one or more atomic action properties.
11. (Optional) To configure an atomic action for rollback, do the following:
    a. Click **Select**.

       The Rollback Atomic Service Selection dialog box appears.
    b. Select an atomic action for rollback and click **OK**.
12. Select **File**, then select **Save**.

Related Topics

Atomic Action Editor

Defining Action Processor Properties

The steps for defining action processor properties depend on the type of action processor you want to use.

Do one of the following:

- To use the action processor that auto-generates functional Java files that include classes and methods configured for the command-line interface (CLI) protocol and attributes you selected, follow the steps in "Defining properties for the CLI Code Generation Action Processor".
- To use the action processor that auto-generates Java stub files and provides the framework of classes and methods, follow the steps in "Defining properties for the Java Action Processor (with Code Generation)".
- To associate an action processor with pre-written Java classes and methods, follow the steps in "Defining Java Action Processor (Without Code Generation)".
- To associate an action processor with a state table, follow the steps in "Defining State Table (Without Code Generation)".

Defining properties for the CLI Code Generation Action Processor

This procedure assumes you have completed the following tasks:

- Created and fully configured an atomic action that includes the required parameters. You must associate the atomic action to this action processor.
- Configured the CLI command structure for all CLI commands associated with the project. For more information, see the topic on configuring the CLI command structure in *Oracle Communications ASAP Cartridge Development Guide*.
- Configured the CLI command request messages that the program sends to the NE or EMS. For more information, see the topic on creating and configuring atomic actions in *Oracle Communications ASAP Cartridge Development Guide*.
- Configured the CLI command response message to define how the program determines user defined exit types in CLI response messages from the NE or

EMS. For more information, see the topic on creating and configuring atomic actions in *Oracle Communications ASAP Cartridge Development Guide*.

To configure properties for the CLI Code Generation Action Processor:

1. In the Studio Projects view, double-click an action processor entity.

   The Action Processor editor appears.
2. In the **Description** field, enter a description.
3. From the Type list, select **CLI Code Generation**.
4. Click **New**.

   Design Studio automatically generates Java code.

   The **Class** field points to the auto-generated proxy Java file.

   The **Method** field points to the execute method within the processor Java file.

   For information about the auto-generated Java files and code and the areas where you must additional business logic, see *ASAP Cartridge Development Guide*.

Related Topics

Defining Action Processor Properties

Defining properties for the Java Action Processor (with Code Generation)

This procedure assumes you have completed the following tasks:

- Created and fully configured an atomic action that includes the required parameters. You must associate the atomic action to this action processor.

To configure properties for the Java Action Processor with code generation:

1. In the Studio Projects view, double-click an action processor entity.

   The Action Processor editor appears.
2. In the **Description** field, enter a description.
3. From the Type list, select **Java Action Processor (with Code Generation)**.
4. Click **New**.

   The Studio Activation Java Implementation Wizard appears.
5. In the **Package** field, enter a valid package name or use the default package name. The default package name uses the vendor, technology, software version, entity, and action that you selected when creating the action processor.
6. In the **Name** field, enter a name that appears in many of the auto-generated Java files and the classes they contain. The default name is a combination of the action and the entity.
7. Click **Finish**.

   Design Studio automatically generates the Java code.

   The **Class** field points to the auto-generated proxy Java file.

   The **Method** field points to the execute method within the processor Java file.

   For information about the auto-generated Java code and where you must add business logic, see *ASAP Cartridge Development Guide*.

8. Select **File**, then select **Save**.

Related Topics

Defining Action Processor Properties

Defining Java Action Processor (Without Code Generation)

This procedure assumes you have completed the following tasks:

- You have created the methods and classes that you want to associate with the action processor. For information about the writing Java code from scratch, see *Oracle Communications ASAP Cartridge Development Guide*.

To define properties a Java action processor without code generation:

1. In the Studio Projects view, double-click an action processor entity.

   The Action Processor editor appears.
2. In the **Description** field, enter a description.
3. From the Type list, select **Java Action Processor**.
4. In the **Class** field, enter the class name of the Java class.
5. In the **Method** field, click **select**.

   The **Select Java Implementation** dialog appears.
6. Select a method from the Matching Items list and click **OK**.
7. Select **File**, then select **Save**.

Related Topics

Defining Action Processor Properties

Defining State Table (Without Code Generation)

To define properties for a state table:

1. In the Studio Projects view, double-click an action processor entity.

   The Action Processor editor appears.
2. In the **Description** field, enter a description.
3. From the Type list, select **State Table**.
4. In the **State Table** field, enter a state table name or use the default state table name.
5. In the **Program** field, enter a program name or use the default program name.
6. Click **New**.

   A new state table appears with the program name listed on the first line.
7. Write the state table code, save and close the file. For more information about writing state table code, see *Oracle Communications ASAP Developer's Guide*.
8. Go back to Action Processor editor and the Select **File**, then select **Save**.

Related Topics

Defining Action Processor Properties

Generating Framework Models

The Cartridge Generation tool expedites the creation of Activation cartridge projects. For Activation Network cartridge projects, Cartridge Generation tool creates service actions, atomic actions, and action processors links all combinations of the entities in a 1:1:1 relationship. For Activation Service cartridge projects, the Cartridge Generation tool creates only service actions (the tool cannot determine which atomic actions you will associate with the service actions).

For Activation Service cartridges, the type of service model (common, mixed or vendor/technology/software load-specific) affects the naming convention that the Cartridge Generation tool uses for the atomic actions.

Note:

The Cartridge Generation tool does not overwrite a framework that already exists. Rather, it adds to framework new and modified actions and entities. Additionally, Design Studio does not delete old actions or entities. You can delete old actions or entities manually.

When generating framework models, see the following topics:

- Generating Framework Models for Activation Network Cartridges
- Generating Framework Models for Activation Services Cartridges

Generating Framework Models for Activation Network Cartridges

You can use the Cartridge Generation tool to generate models for Activation Network cartridge projects.

To generate framework models for Activation Network cartridges:

1. In the Studio Projects view, double-click an Activation Project entity to open the Project editor.
2. Click the **Cartridge Layout** tab.
3. In the Add area, click **Add**.

   Design Studio prompts you to enter an action to be performed by the cartridge (for example, ADD, MOD, DEL, QUERY). Also, you enter a description for the action.
4. In the Entity area, click **Add**.

   Design Studio prompts you to specify the entities on which the actions are to be performed (for example, PORT, SUBSCRIBER, SUBSCRIPTION, LINE, and so forth). Also, you enter a description for the entities. The Cartridge Generation tool combines the descriptions defined for each action and entity combination (for example, add a single port on the device).

5. Repeat steps 1 and 2 and add any additional action and entity combinations.
6. Click **Generate Cartridge**.

   A dialog box appears and prompts you to confirm the generation.
7. Click **Yes**.

   Design Studio creates service actions, atomic actions, and action processors for all action and entity combinations. The generated entities appear in the Studio Projects view. You can view the hierarchy and relationships in the Relation Graph view.
8. To complete the modeling, adjust the properties and define parameters for the atomic action.

Related Topics

Generating Framework Models

Activation Project Editor

Generating Framework Models for Activation Services Cartridges

You can use the Cartridge Generation tool to generate models for Activation Service cartridge projects.

To generate framework models for Activation Service cartridge projects:

1. In the Studio Projects view, double-click an Activation Service cartridge project entity.

   The entity opens in the Project editor.
2. Click the **Cartridge Layout** tab.
3. In the Add area, click **Add**.

   Design Studio prompts you to enter an action to be performed by the cartridge (for example, ADD, MOD, DEL, QUERY). Also, you enter a description for the action.
4. In the Entity area, click **Add**.

   Design Studio prompts you to specify the entities on which the actions are to be performed (for example, PORT, SUBSCRIBER, SUBSCRIPTION, LINE, and so forth). Also, you enter a description for the entities. The Cartridge Generation tool combines the descriptions defined for each action and entity combination (for example, add a single port on the device).
5. Repeat steps 1 and 2 and add any additional action and entity combinations.
6. Click **Generate Cartridge**.

   A dialog box appears and prompts you to confirm the generation.
7. Click **Yes**.

   Design Studio creates service actions for all action and entity combinations. The generated entities appear in the Studio Projects view. You can view the hierarchy and relationships in the Relation Graph view.
8. Link atomic actions to the generated service actions.

   Do one of the following:

- Link to existing atomic actions from Activation Network cartridge projects. These atomic actions have existing links to action processors.
- Create and link to new atomic actions. When you create new common atomic actions, you must manually link the atomic actions with action processors.

Related Topics

Generating Framework Models

Activation Project Editor

Creating Event Templates

Event templates enable you to customize the parameters that are returned when an ASAP event is triggered. If there is no matching template for an event type, no parameters are returned.

To create an event template:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, then select **Activation**, and then select **Event Template**.
3. Select a project for this element and enter a name for the entity.
4. (Optional) Select a location for the entity.

   By default, Design Studio saves the entity to your default workspace location. You can enter a folder name in the **Folder** field or select a location different from the system-provided default. To select a different location:

   a. Deselect the **Use recommended name and location** check box.
   b. Click the **Folder** field **Browse** button.
   c. Navigate to the directory in which to save the entity.
   d. Click **OK**.
5. Click **Finish**.

   In the Studio Projects view, in the project folder, the new event template entity appears.

See *ASAP System Administrator's Guide* and *ASAP Developer's Guide* for more information on event templates.

Related Topics

Event Template Editor

Documenting Models

Design Studio automatically generates documentation for Activation cartridge modeling in HTML format and updates the documentation with each build. To access the documentation in each of the editors, navigate to the **Blueprint** tab. The blueprint displays documentation for the entity and provides links to the other entities.

There are some entities for which Design Studio does not generate documentation. You must include text for the following:

- For for each of the three modeling entities (service action, atomic action, and action processor), you must define the **Description** field.
- For the action processor, you must include documentation for commands used (in the Command Overview), the output of the action processor (in the **Output** tab), and comments (in the **Development Notes** tab).
- For atomic actions, you must define the **Data Restriction** field, which enables you to specify valid range and values for parameters within the atomic action.
- For service actions, you must define any properties.

Example 1: Modeling Services

In this example, you model a service to create a postpaid mobile subscriber with the following constraints:

- Only Ericsson Home Location Registers (HLRs) are used, but there are multiple software loads present in the network for this network element type (release 11-0 and release 12-0).
- Each time a subscriber is added, the subscriber must also be added to the Flexible Number Register (FNR) for number portability purposes.
- Only Ericsson FNRs are used, but there are multiple software loads present in the network for this network element type (release 8-0 and release 9-1).

Given these constraints, you determine that an activation network service model is inappropriate and decide to implement a common service model, as there are multiple software loads and technologies involved.

Note:

When different vendors exist in the network, it may not be possible to use a common software load. See "About Common Service Models" for information about advantages and disadvantages of using a common service model. Additionally, see "Example 2: Modeling Services".

To model a service to create a postpaid mobile subscriber:

1. Import the required cartridges:
   - Ericsson HLR R11-0
   - Ericsson HLR R12-0
   - Ericsson FNR R8-0
   - Ericsson FNR R9-1
2. Create a common service action that is vendor, technology, software load agnostic.

   This service action will be required to activate services on different vendor equipment (Ericsson HLR and Ericsson FNR) running different software loads (multiple software loads for each technology):

   ```
   C_CREATE_POSTPAID-SUBS
   ```

3. Create common atomic actions for the Ericsson HLR and Ericsson FNR to create the subscriber.

   These should be software load agnostic to take advantage of the fact that there is only one vendor with the need to support multiple software loads:

   - `A_ERIC-HLR_CREATE_SUBSCRIBER`
   - `A_ERIC-FNR_CREATE_SUBSCRIBER`

4. Drag the action processors (from the imported cartridges) to the common atomic actions.

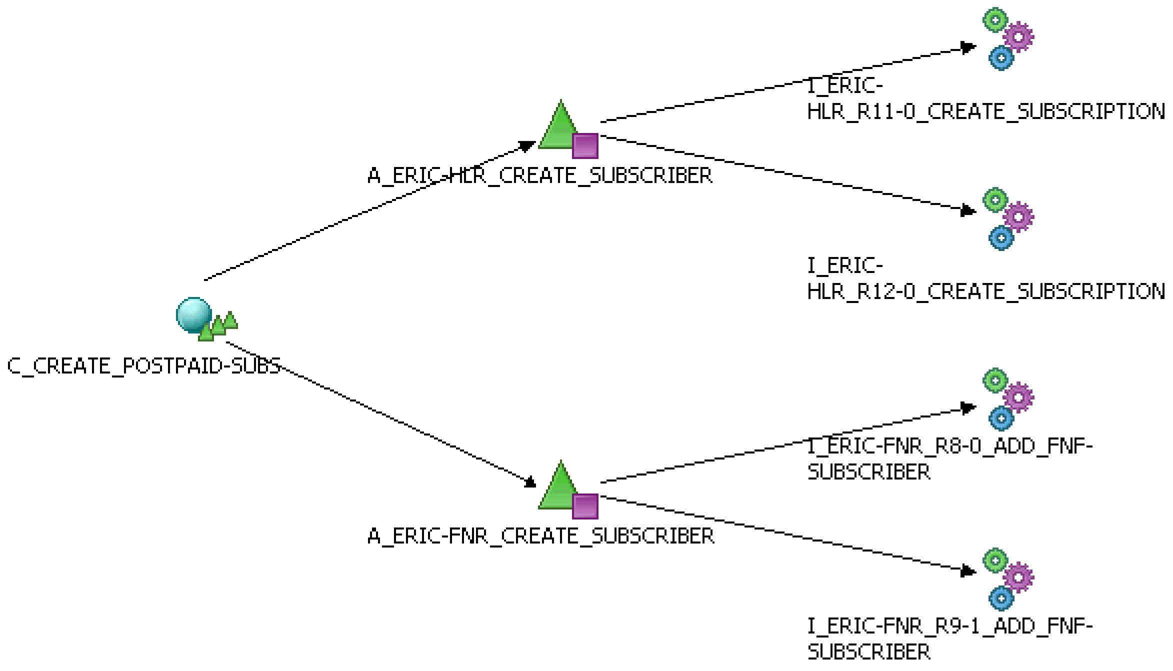
   By reusing cartridge action processors, the parameters for the atomic action will be automatically generated:

   ```
   A_ERIC-HLR_CREATE_SUSBSCRIBER -> I_ERIC-HLR_R11-0_CREATE_SUBSCRIPTION
   A_ERIC-HLR_CREATE_SUSBSCRIBER -> I_ERIC-HLR_R12-0_CREATE_SUBSCRIPTION
   A_ERIC-FNR_CREATE_SUBSCRIBER -> I_ERIC-FNR_R8-0_ADD_FNF-SUBSCRIBER
   A_ERIC-FNR_CREATE_SUBSCRIBER -> I_ERIC-FNR_R9-1_ADD_FNF-SUBSCRIBER
   ```

5. Drag each of the common atomic actions you have created onto the common service action you have created to link all entities together:

   ```
   C_CREATE_POSTPAID-SUBS -> A_ERIC-HLR_CREATE_SUSBSCRIBER
   C_CREATE_POSTPAID-SUBS -> A_ERIC-FNR_CREATE_SUSBSCRIBER
   ```

The linked entities should now appear in the Relation Graph view:


I_ERIC-HLR_R11-0_CREATE_SUBSCRIPTION
A_ERIC-HLR_CREATE_SUBSCRIBER
I_ERIC-HLR_R12-0_CREATE_SUBSCRIPTION
C_CREATE_POSTPAID-SUBS
I_ERIC-FNR_R8-0_ADD_FNF-SUBSCRIBER
A_ERIC-FNR_CREATE_SUBSCRIBER
I_ERIC-FNR_R9-1_ADD_FNF-SUBSCRIBER

Note:

If the customer has additional software loads to support in the future, these can be added by dragging the action processors to the atomic actions (the parameter set is rationalized automatically but should be verified manually to ensure accuracy of parameter attributes).

Related Topics

About Service Action, Atomic Action, and Action Processor Relationships

Relation Graph General View

Example 2: Modeling Services

In this example, you model a service to create a PSTN subscriber with the following constraints:

- There are two vendors, Lucent 5ESS and Nortel DMS 100.
- There is currently only one software load in the network for each (16 and SN06, respectively).

Given these constraints, you determine that it may be too challenging to use an exclusively common service model if the atomic action from each cartridge is different (for example, if the action contains different parameters sets). One possible way to model this is to use a common service action but reuse the atomic actions from the cartridges.

To model a service to create a PSTN subscriber:

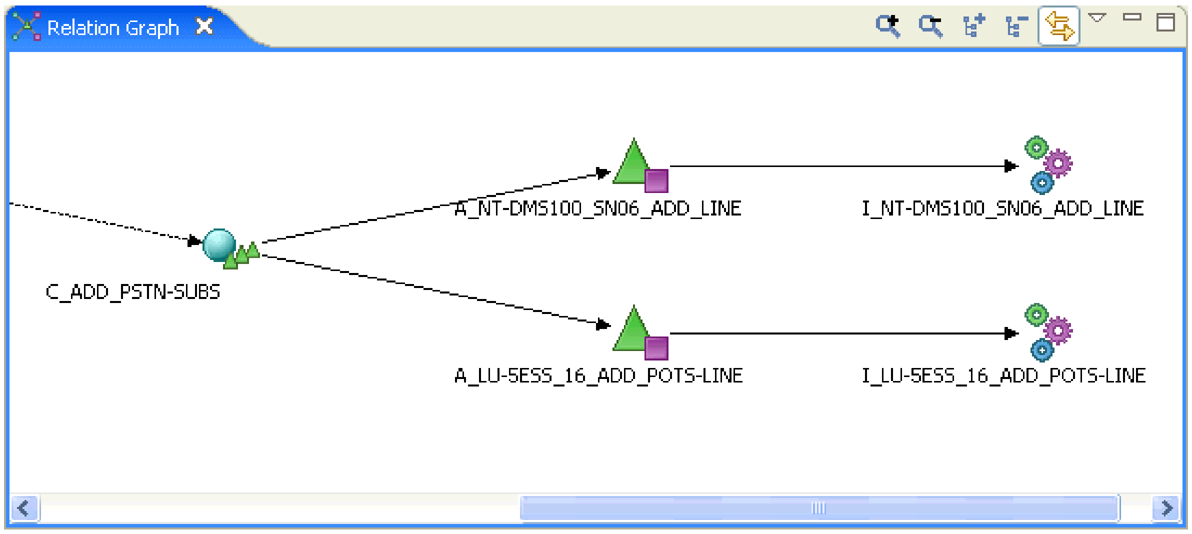
1. Import the required cartridges:
   - Lucent 5ESS 16
   - Nortel DMS 100 SN06
2. Create a common service action (vendor, technology, software load agnostic).

   This service action will be required to activate services on different vendor equipment (Lucent and Nortel):

   ```
   C_ADD_PSTN-SUBS
   ```
3. Drag the atomic actions from the cartridges to the service action you have just created:

   ```
   C_ADD_PSTN_SUBS -> A_NT-DMS100_SN06_ADD_LINE
   C_ADD_PSTN_SUBS -> A_LU-5ESS_16_ADD_POTS-LINE
   ```

   The linked entities now appear in the Relation Graph view:


Relation Graph
C_ADD_PSTN-SUBS
A_NT-DMS100_SN06_ADD_LINE
I_NT-DMS100_SN06_ADD_LINE
A_LU-5ESS_16_ADD_POTS-LINE
I_LU-5ESS_16_ADD_POTS-LINE

4. Create the appropriate spawning logic using the vendor, technology, and software load to ensure the correct atomic action runs for each work order.

> **Note:**
>
> Alternatively, you could implement this service model using logic in the SRT component to execute the correct vendor specific service model, as this configuration has performance inefficiencies due to the need for conditional spawning logic. Moreover, the configuration has complexities that are introduced into the service model when multiple software loads require support (for example, a dedicated atomic action is required for each).

Related Topics

About Service Action, Atomic Action, and Action Processor Relationships

Relation Graph General View

Service Action Editor

Use the Service Action editor to map the service action entity to atomic actions. In the Studio Projects view, double-click a service action entity to open the Service Action editor. You can create the editor using the Service Action Wizard.

> **Caution:**
>
> The Service Action editor for IP Service Activator service actions is read only. Service actions for IP Service Activator cannot be modeled in Design Studio, only viewed.

When working with the Service Action editor, see the following topics:

- Service Action Editor Editor Tab

- Service Action Editor Blueprint Tab
- Service Action Editor Realization Tab

Service Action Editor Editor Tab

Use the **Editor** tab for mapping the ASAP service action to atomic actions, defining properties for the service action, and display the parameter mapping of the service action and atomic actions.

The **Editor** tab for IPSA service actions is read only and cannot be used to modify or model the service action.

Field	Use
Description	Specify a description for the Service Action editor.
Vendor, Technology, and **Software Load**	Displays the vendor, technology, and software load for the service action entity in the cartridge project. There are three states for these fields as follows: • **Unknown:** When a service action entity is created but not mapped to an atomic action. • **Multiple:** When a service action is mapped to more than one atomic action. • *Vendor, Technology* and *Software Load*: When a service action is mapped to an atomic action, the exact values of the vendor, technology and software load are populated in these fields.
Action	Displays the action of the atomic action added in the Service Action Details area in the **Atomic Action(s)** tab. There are three states for this field as follows: • **Unknown:** When a service action entity is created but not mapped to an atomic action. • **Multiple:** When a service action is mapped to more than one atomic action. • *Action*: When a service action is mapped to an atomic action, the action of the atomic action is populated in this field.

Related Topics

Parameters Tab

Atomic Action(s) Tab

Command Overview Tab

Properties Tab

Defining Service Action Properties

Parameters Tab

Use the **Parameters** tab to view the mapping details of the service action and one or more atomic actions.

Field	Use
Summary List	Select to display in the Service Action Details area, the parameter details of corresponding one or more atomic actions as configured on the Atomic Action editor. On clicking in a specific row, the corresponding atomic action's parameter details are available in the Parameter Map area.
Complete Parameter Map	Select to display in the Service Action Details area, the parameter details of the service action and corresponding one or more atomic actions as configured on the Atomic Action editor.

Related Topics

Atomic Action(s) Tab

Command Overview Tab

Properties Tab

Defining Service Action Properties

Atomic Action(s) Tab

Use the **Atomic Action(s)** tab to map the service action to one or more atomic actions. In the Service Action Details area, you can define the conditions for mapping the service action and the atomic actions.

Service Action Details

Field	Use
Seq	Displays the sequence number for each atomic action added in the Service Action Details area.
Atomic Action	Displays the atomic actions mapped to the service action.
Condition	Displays the condition defined for spawning an atomic action.
Label, Value, and **Expression**	Displays the parameter name, value, and regular expression specified in the Atomic Action Conditions area based on the selected condition.
Vendor, Technology, and **Software Load**	Displays the vendor, technology, and software load of the atomic action mapped to an action processor.
Action	Displays the action of the atomic action added in the Service Action Details area in the **Atomic Action(s)** tab. If the service action is mapped to atomic actions with different actions then **Multiple** appears.

Field	Use
Rollback Point	(Optional) Select any one of the following: • **State:** The atomic action is the PNR for partial rollback. If rollback occurs and execution continues beyond this point, rollback occurs to the atomic action but not further. • **Stop:** Beyond the specific atomic action, no rollback can occur. The default behavior of rollback, when nothing is selected in the Rollback Point column, is a complete rollback of all the atomic actions in a failed work order. **Note:** If you want an atomic action to rollback, you must select the **Rollback** check box in the **Properties** tab.
Open	Click to open the atomic action in the Atomic Action editor.
Remove	Click to remove the mapping of the service action and the atomic action from the editor.
Add	Click to map an atomic action to the service action.

Atomic Action Conditions

Field	Use
Always	Select for ASAP to always generate this atomic action command for the specific service action.
Equals	Select for ASAP to generate this atomic action command if the service action parameter stated in the **Parameter Label** field, in the Atomic Action Conditions area, is defined on the service action and has the parameter value as specified in the **Parameter Value** field.
Defined	Select for ASAP to generate this atomic action command if the service action parameter specified in the **Parameter Label** field, in the Atomic Action Conditions area, is defined on the service action.
Not Defined	Select for ASAP to generate this atomic action command if the service action parameter stated in the **Parameter Label** field, in the Atomic Action Conditions area, is not defined on the service action.
Parameter Label	Select a label name from the list.
Parameter Value	Specify a value in the field. This field is available when you click the **Equals** button.

Field	Use
Include Expression	Define a logical expression for a service action parameter. The range of options available enables an atomic action to be generated if the service action parameter value is within a range of values, or if the service action parameter is greater than, or less than, or equal to, a specified value. More than one condition can be combined in the expression using AND or OR operator. For example, a service action, ADD_PHONE, is mapped to an atomic action, A, which has three integer parameters: PARAM1_VALUE, PARAM2_VALUE and PARAM3_VALUE. If you specify the following expression: `(PARAM1_VALUE LIKE "0")OR((PARAM1_VALUE LIKE PARAM2_VALUE)AND(PARAM2_VALUE !LIKE PARAM3_VALUE))` then the atomic action, A, from the service action, ADD_PHONE, is spawned only if the expression matches. Right-click in the **Include Expression** field area to access the context menu options **Cut**, **Copy**, **Paste** and **Select All**.

Related Topics

Parameters Tab

Command Overview Tab

Properties Tab

Defining Service Action Properties

Command Overview Tab

Use the **Command Overview** tab to view the service action and atomic action details.

Related Topics

Parameters Tab

Atomic Action(s) Tab

Properties Tab

Defining Service Action Properties

Properties Tab

Use the **Properties** tab for defining values for the service action.

Field	Use
Level	Select a sequence level for the service action within the work order. See *ASAP Developer's Guide*.
Service Action Completion Event	(Optional) Select an event from the list that will be triggered when the service action is complete. See *ASAP Developer's Guide* and *ASAP System Administrator's Guide*.

Field	Use
Rollback	Select the **Rollback** check box to configure rollback on the service action. Ensure to select a rollback value in the **Atomic Action(s)** tab.
Service Action Failure Event	(Optional) Select an event from the list that will be called when the service action fails. See *ASAP Developer's Guide* and *ASAP System Administrator's Guide*.

Related Topics

Parameters Tab

Atomic Action(s) Tab

Command Overview Tab

Defining Service Action Properties

Service Action Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the service action entity. This tab is read only.

Related Topics

Service Action Editor Editor Tab

Modeling ASAP Services

Defining Service Action Properties

Service Action Editor Realization Tab

Use the Service Action editor **Realization** tab to associate ASAP service actions with a conceptual model technical action.

Field	Use
Realizes	Click to open the selected technical action in the Action editor.
Select	Associates the ASAP service action with a conceptual model technical action. To select from the available conceptual model technical actions, there must be a dependency defined between your ASAP cartridge project and the Model project in which your conceptual model is saved. See "Managing Project Dependencies" for more information.

Related Topics

Working with Conceptual Models

Service Action Editor

Defining Service Action Properties

Atomic Action Editor

Use the Atomic Action editor to define activation run-time type parameters, define a routing type, and map the atomic action to one or more action processors.

For atomic actions generated by Design Studio from CTM Templates for IP Service Activator, see "IP Service Activator Atomic Action Editor".

You can create the Atomic Action editor using the Atomic Action Wizard. In the Studio Projects view, double-click an atomic action entity to open the editor.

See the following topics:

- Atomic Action Editor Parameters Tab
- Atomic Action Editor Details Tab
- Atomic Action Editor Mappings Tab
- Atomic Action Editor Blueprint Tab

Atomic Action Editor Parameters Tab

Use the **Parameters** tab to add data elements from the Data Dictionary and configure values to the ASAP run-time type parameters.

Note:

In Activation, the **Enumeration**, **Tags**, and **Usage** tabs are not applicable.

When working with the **Parameters** tab, see the following topics:

- Atomic Action Editor Parameters Area
- Details Tab
- Activation Tab
- Notes Tab

Atomic Action Editor Parameters Area

Use the Atomic Action editor Parameters area to add required data elements from the Data Dictionary to the atomic action entity. You can view a hierarchical representation of the data elements.

You can modify data dictionary elements that you have imported into the Atomic Action editor without changing the default parameter values in other atomic actions that use the same data dictionary element. Do not modify data dictionary elements from within the data dictionary unless you want to make the change globally across all atomic actions that use the parameter.

Related Topics

Atomic Action Editor

About the Atomic Action Editor Context Menu

Modeling Activation Cartridge Project Data

Defining Atomic Action Properties

Details Tab

Use the **Details** tab to edit the data element display name and define specific constraint values. When you select a data element in the Parameters area, the details for the selected data element appear in the Parameter Details area.

Field	Use
Select	(Optional) Select a data element that exists in the Data Dictionary, in case you want the selected parameter, in the Parameters area, to behave like a data element in the data schema. Click the **Type** label to open the data element.
Primitive Type	Displays the data type for simple data elements as in the data schema.
Name	Displays the name of the data element as in the data schema.
Display Name	Edit the data element display name. The Atomic Action editor supports multiple languages for this field. The field adjacent to **Display Name** displays your language. You can define a **Display Name** field value for any language you select from the list. If your preferences are set up to work in one language only, the system displays only the **[default]** option. See "Defining Language Preferences" for more information.
Path	Displays to which atomic action the parameter belongs.This field is read only.
Namespace	Not applicable in Activation.
Multiplicity	Select any one of the following: • **Required:** If the required parameters are not available, ASAP will not validate the work orders. The minimum and maximum values are both 1. • **Optional:** If the optional parameters are not available, ASAP will proceed validating the work orders. The minimum value is 0 and maximum value is 1. • **Range:** You can change **Minimum**, **Maximum**, and **Unbounded** only when you select **Range**. Depending on the minimum value, multiplicity will be either required or optional for an ASAP server. If minimum is 0, multiplicity is an optional parameter for ASAP. If minimum is greater than 0, multiplicity is a required ASAP parameter. Multiplicity can be seen in the build artifact file of the atomic actions in the generated SAR file.
Abstract and **Internal**	Not applicable in Activation.
Deprecated	Select to discourage use to the data element.

Field	Use
Length	Specify the minimum and maximum length for String data type. This field is read only for data elements that inherit from a parent element. You must define the minimum and maximum lengths with a non-negative integer between 0 and 999999999. Select **Unbounded** to define the maximum length as 999999999.
Default	Specify a default value. If there is no value in the work order for the parameter the default value is used.

Related Topics

Atomic Action Editor Parameters Area

Activation Tab

Defining Atomic Action Properties

Activation Tab

Use the **Activation** tab to modify the run-time type parameter of the data element added in the **Parameters** tab of the Atomic Action editor. This modification is specific to the atomic action entity.

Field	Use
Compound Member Label	Displays the same name as the parameter in the Parameters area. You can use the compound member in the code generated Java Action processors (of Java code) to access the compound members of a compound parameter. To rename the compound member, you must select **Refactoring** from the Atomic Action editor context menu. See "About the Atomic Action Editor Context Menu" for more information.

Field	Use
Runtime Type	Displays the parameter as in the Data Dictionary for this data element. You can select any one of the following run-time type parameters, specific to this atomic action entity, and define in this tab: • **SCALAR:** Conventional name-value pair parameters for simple data elements. This is the default when the run-time type parameter is left blank in the Data Schema editor. • **SCALARS:** Applicable to the root-level of structured data elements. The leaf (child) elements become conventional name-value pair parameters. This is the default when the run-time type is left blank in the Data Schema editor. For example, you add a structure element, Structure1, and a leaf child element, Child1, with the run-time type left blank in the Data Schema editor. You then add Structure1 to the Parameters area on the Atomic Action editor. Child1 is added along with Structure1. For Structure1, the default ASAP run-time type **SCALARS** appears in the **Activation** tab and the leaf child element inherits from the root and has **SCALAR**. Structured scalars elements are converted into individual ASAP scalar parameters by absorbing the structured element names into the scalar parameter name. The example used above for Structure1 and Child1 would appear by default as the ASAP scalar parameter structure1_child1. The default character used to separate the elements in the ASAP parameter names is the underscore (_). It is possible to change this character. See "Activation Preferences Page" for more information. • **COMPOUND:** Contains structures or arrays of information that are represented by a particular structure name or compound parameter name. • **XML:** Used as values for both information parameters and extended work order properties. • **XPATH:** Defines an XPath expression into XML data. Depending on the run-time type parameter, the labels in this tab are visible. See *ASAP Developer's Guide* for more information on parameter types.
Atomic Action Label	Displays the name of the parameter in the atomic action as in the Data Dictionary for this data element. You can specify a unique name for the atomic action, but this name will be specific to this atomic action entity.
Service Action Label	Displays the name of the parameter in a service action mapped to this atomic action. The name is unique and is same as the data element name.
Indexed	Select the check box if you want to index the run-time type parameter.
Data Restrictions	Specify any restriction on the value of the parameter.
Dependent XML	Displays the path of the XML that defines the parameter. This field is available only for the **XPATH** run-time type parameter.

Related Topics

Atomic Action Editor Parameters Area

Details Tab

Modeling Activation Cartridge Project Data

Defining Atomic Action Properties

Creating Activation Run-Time Type Parameters in the Data Dictionary

Atomic Action Editor Details Tab

Use the **Details** tab for selecting the routing type of an atomic action to the network element.

Field	Use
Routing Support	Select a routing type. Based on the selected routing type, the mandatory parameters for the routing type are automatically added to the Parameters area in the **Parameters** tab. **Note:** If you select **None**, no parameter is added in the Parameters area. Oracle recommends select a routing type. See *ASAP System Administrator's Guide*.
Provide Parameter Count	Select to indicate that the Network Element Processor (NEP) should send the current index value for the atomic action.
Index Count	Specify the name of the parameter for obtaining the index value in Java provisioning classes.
Timeout (Second)	Specify the number of seconds before the ASAP server considers an atomic action in-progress as failed. The default value is **0**, which means ASAP server will not consider the atomic action in-progress as failed.
Select	Click to select an atomic action that is called to rollback the changes of the current atomic action in case of a failure scenario. Click X link, if you want to clear the atomic action from the field. For example, atomic action A is mapped to service action B. The rollback is configured on the service action. On the Atomic Action editor, in the **Details** tab, for the atomic action entity A, you select an atomic action Y. In case of a failure scenario, the service action B is rolled back and atomic action Y is called to rollback the action of atomic action A.
Retry	Select the check box to enable the **Retry Count** and the **Retry Interval** fields.
Retry Count	Specify the number of times the atomic action can be tried at the network element.
Retry Interval	Specify the time interval, in seconds, between each retry attempt by ASAP.

Related Topics

Atomic Action Editor

Defining Atomic Action Properties

Atomic Action Editor Mappings Tab

Use the **Mappings** tab for mapping action processors to the atomic action.

Field	Use
Open	Click to open the action processor selected in the grid.
Clone	Click to create a copy of the action processor selected in the grid.
Remove	Click to clear the action processor from the grid.
Add	Click to map an action processor to the atomic action. The mapped action processor appears in the grid.
Vendor, Technology, and **Software Load**	Displays the vendor, technology, and software load for the selected action processor. You can select an atomic action to map to different action processors based on the vendor, technology, and software load. For example, later when the network element software version changes, you can create another action processor and map that one also to the same atomic action. As entries in the mappings cannot have duplicate vendor, technology, and software, you can update some of them accordingly. This allows you to use the same cartridge even when the software version changes.
Action Processor	Displays the name of the action processor selected in the grid.
Script	Displays the script that contains the method, as seen on the Action Processor editor, that is executed for the selected action processor.
Command Overview	Describes the expected behavior of the action processor when the script in the **Script** field is called.

Related Topics

Atomic Action Editor

Defining Atomic Action Properties

Atomic Action Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the atomic action entity. This tab is read only.

Related Topics

Atomic Action Editor

Defining Atomic Action Properties

Action Processor Editor

Use the Action Processor editor to define an action processor entity. In the Studio Projects view, double-click an action processor entity to open the Action Processor editor. You can create the editor using the Action Processor Wizard.

When working with the Action Processor editor, see the following topics:

- Action Processor Editor Editor Tab
- Action Processor Editor Request Tab
- Action Processor Editor Response Tab

- Action Processor Editor Blueprint Tab

Action Processor Editor Editor Tab

Use the **Editor** tab to define the properties and generate the code for an action processor.

Field	Use
Description	Specify a description for the Action Processor editor.
Vendor, **Technology**, and **Software Load**	Displays the vendor, technology, and software version for the action processor entity in the cartridge project.
Action	Select an action from the list of actions or enter an action not in the list.
Type	Select the type of action processor: • **Java Action Processor (with Code Generation)** This is the default. Based on the selected action, this type generates a basic class and the framework of a method required for an action processor. • **CLI Code Generation** This type generates fully functional Java code for constructing and sending CLI-based messages. You must configure the request and response parameters for CLI-based commands in the Action Processor Request and Response tabs before clicking **New** to generate the CLI code. • **Java Action Processor** This type requires that you (or developers) map an existing class and method to the action processor or create one from scratch. You must manually write the code for the class and method for the action processor. • **State Table** This requires that you (or developers) map an existing state table and program to the action processor. You must manually write code for the state table and program.
Class and **Method**	The **Java Action Processor (with Code Generation)** and the **CLI Code Generation** options display the class and method names mapped to the action processor after the code is generated by clicking the **New** button. **Java Action Processor** displays the default values of **myProcessor** and **execute** respectively. The code for the default values does not exist. You must change these values to existing class and method names and map them using **Select**.
State Table and **Program**	Displays the default values of **S_MY_STATE_TABLE** and **doAction** respectively. **Note:** The code for the default values does not exist. You must change values to existing state table and program names and map them using **Select**.
Open	Click to see the code. This button is enabled only when the code is available.
New	Click to create the action processor implementation. **Note:** Enabled only for Java Action Processor (with Code Generation) and CLI Code Generation action processors.

Field	Use
Select	Select Java implementation or state table implementation. Use this button to map the class and method to the Java Action Processor or to map the state table and program to the State Table action processor. **Note:** Enabled only for Java Action Processor and State Table action processors.
Command Overview	Enter documentation in the Command Overview area for the MML commands.
Output	Enter comments in the output area from the action processor (for example, return the following parameters as INFO or CSDL) in the Output area.
Development Notes	Enter comments provided by the cartridge developer in the Development Notes area.

Related Topics

Action Processor Editor

Defining Action Processor Properties

Action Processor Editor Request Tab

Use the **Request** tab in the Action Processor editor to define the parameters for a CLI command request messages. In the Command Definition Area area, you can define:

- **Separators**: In this area, you can specify command parameter separators that override the CLI command structure you defined in the Action Project editor **Command Structure** tab.
- **Command**: In this area, you can parse sample CLI commands and generate CLI code for the action processor.
- **Parameters**: In this area, the elements are either automatically generated from the sample CLI command you parsed in the Commands area or you can manually add elements.

Field	Use
Overwrite	Select to override the default command structure defined in the Activation Project editor **Command Structure** tab. You must select this check box to make the separator fields editable. For more information about the fields in the Separators area, see the field definitions in "Activation Project Editor Command Structure Tab".
Command Auto-Parse Override	Select if you want to automatically parse sample CLI input commands. This enables the **Parse Input Command** button.
Input Command	Enter a sample CLI command that represents the CLI command elements you want to use in the action processor.

Field	Use
Command Parameter	Click to designate the CLI parameter you entered in Input Command as a command parameter. If you designate a parameter as a **Command Parameter**, then you must choose the following: After you make your selection, the highlighted parameter appears in the **Element Name** list. When you select one of the auto-generated parameters from the **Element Name** list, the associated atomic action parameters appear in the **Maps To** field (except for **StaticString** parameters).
Command Header	Specifies the command header. You can: • Manually enter the command header in this field. • Highlight a command header in the sample input command you entered in the **Input Command** field and select **Command Header**. • Click **Parse Input Command** to have the action processor automatically enter the command header based on the command structure.
Parse Input Command	Click to automatically **Parse Input Command** button after you have entered a sample CLI command that you want to tokenize.
Element Name	Lists the parameters that you want to use in the action processor. You can automatically generate these parameters by parsing a sample command or manually add them.
Type	When you select an parameter from the **Element Name** list, you can apply one of the following parameter types from the **Type** list. • **Name Value Pair**: When you select this option, the element name and value is used. You must select a parameter from the atomic action from which the value is populated. • **ValueOnly**: When you select this option, only the value is used. The element name does not appear in the command. You must select a parameter from the atomic action from which the value is populated. • **StaticString**: When you select this option, the element name alone is used. Static strings do not contain values and may not be associated to atomic action parameters.
Maps To	When you designate a parameters from the **Element Name** list as **Name Value Pairs** or **ValueOnly**, you must map the parameter to an atomic action parameter in the **Maps To** field. The action processor includes the value of the atomic action parameter in the request message.

Field	Use
Parameter Logic	In the **Parameter Logic** field, you can add one line logic for **Name Value Pairs** and **ValueOnly** parameters that further specifies how a atomic action parameter maps to a parameter in the **Element Name** list. This field calls the methods defined in the **Utils.java** file that Design Studio generates when you add a sample command to the **Input Command** field. All methods defined in **Utils.java** throw exceptions defined in the **ProvCartridgeException.java** file, which is auto-generated when you add a sample command. For more information about the methods contained in the **Utils.java** file, see *ASAP Cartridge Development Guide*. You can also nest two or more command together in the **Parameter Logic** field. For example the following uses the **encloseWith** method within the **concat** method: `concat("*",encloseWith(MCLI,"#","#"),MY_TEST)` Design Studio also generates the **ReusableMethods.java** file where you can define your own one line utility methods that you can use in the **Parameter Logic** field. The methods you define in this Java file should throw exceptions defined in the **ProvCartridgeException.java** file.
Edit Parameter Logic	Click to modify or add logic for a particular parameter. For example, if you have a parameter that maps to more one compound parameter, you must enter additional logic. Clicking this button generates additional Java files where you can make these modifications. For more information about the files generated when you click the **Edit Parameter Logic** button, see *ASAP Cartridge Development Guide*.
Preview	Displays a preview of the structure of the CLI command as you map CLI command elements to atomic action parameters. For example, the following command shows a header named HSDPA, a value-only parameter, two value-pair parameters, two static parameters, and ends with the COMMIT control character: `HSDPA:<mcliVal>,LCC_CODE=<user_routingVal>,LINE=<lineVal>,static, program,;COMMIT`

Related Topics

Action Processor Editor

Defining Action Processor Properties

Action Processor Editor Response Tab

Use the **Response** tab to defining the parameters for a CLI-based action processor CLI command response message.

Field	Use
Response	You can enter a description of the response message.

Field	Use
Response Header	You can enter a response header.
Exit Type Pattern	Specify a response snippet that the code searches for in response messages. You use the **Mark Positions** button to specify what part of the response snippet to verify before sending the response to the user defined exit type code you have written. For more information about exit types, see *ASAP Cartridge Development Guide*.
Edit Response Logic	Click to open the auto-generated **ResponseHandlerImplementation.java** file in which you must enter response handling logic. For more information, see *ASAP Cartridge Development Guide*.

Related Topics

Action Processor Editor

Defining Action Processor Properties

Action Processor Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the action processor entity. This tab is read only.

Related Topics

Action Processor Editor

Defining Action Processor Properties

Event Template Editor

Use the Event Template editor to customize the parameters that are returned when an ASAP event is triggered. If there is no matching template for an event type, no parameters are returned. You can configure static event templates, using the editor, for just four types of events like Order Startup event, Order Complete event, Order Timeout event, and Order Fail event.

Note:

- The dynamic event templates have precedence over static ones. Therefore, if there is any matching dynamic event template, no static event template will be checked. See *ASAP System Administrator's Guide* for more information.
- Depending on the variable INCLUDE_SERVICE_ACTION_DETAIL, the service action parameters are returned. See the *ASAP Server Configuration Guide* for more information.

In the Studio Projects view, double-click an event template entity to open the Event Template editor. You can create the editor using the Event Template Wizard.

When working with the Event Template editor, see the following topics:

- Event Template Editor Editor Tab
- Event Template Editor Blueprint Tab

Event Template Editor Editor Tab

Use the **Editor** tab to define values for an event template. When ASAP is processing an event, ASAP will check if there exists an event template based on the service action, order parameter name and order parameter value, or on all the three: service action, order parameter name, and order parameter value. These details are configured in the **Details** tab. Based on the event name in the **Details** tab, the configuration in the **Return Data Set** tab is selected. The event, in the **Details** tab, is populated with the parameters configured in the **Return Data Set** tab.

Field	Use
Add	Click to add the default event type, **Order Complete Event**, to the Event Templates area.
Remove	Click to clear an event template from the editor.

When working with the **Editor** tab, see the following topics:

- Details Tab
- Return Data Set Tab

Details Tab

Use the **Details** tab to define a selection criteria for selecting an event template in case of an ASAP event.

Field	Use
Use recommended name	Click to enable the **Event Template Name Suffix** field. In the **Event Template Name Suffix** field, you can specify a suffix to the event template name. You can see the suffix being added in the grayed out **Event Template Name** field. The event template name in this case will be E_*Vendor-Technology_SoftwareLoad_EventTemplateNameSuffix*.
Event Type	Select an event type from the list. **Note:** You can apply event templates to just the four event types like Order Startup event, Order Complete event, Order Timeout event, and Order Fail event.
Event Template Name	If the **Use recommended name** check box is deselected, you can specify a name to the event template.
Order Parameter Name	(Optional) Specify a name to the order parameter. This name is used together with the order parameter value**.**
Order Parameter Value	(Optional) Specify a value to the order parameter. This value is used together with the order parameter name.

Field	Use
Select	(Optional) Click to select a service action that is applicable for only matching Order Fail event type events. The matching is against the service action name in the Order Fail event type events. **Note:** Only Order Fail event type events include a service action name that identifies the service action that was executed when the failure occurred.
Open	Click to open the service action entity in the Service Action editor.
Clear	Click to clear the service action displayed in the **Service Action** field.
Event Template Desc	Specify a description to the event template.

Related Topics

Return Data Set Tab

Return Data Set Tab

Use the **Return Data Set** tab to configure parameter type related values that will be returned for an event type. Only the parameters that are defined in this tab for an event template are returned in the related work order events. If no parameter is defined in this tab for an event template, no parameter will be returned for a defined event type.

Field	Use
Parameter Type	Select a parameter type from the list that will be returned when an ASAP event is triggered.
Add	Click to add a row with a default parameter type and parameter name to the **Return Data Set** tab in the Event Template Details area. You can add rows in the **Return Data Set** tab for each of the parameter types.
Remove	Click to clear a parameter type's related details.
Parameter Name	Specify a parameter name, for the selected parameter type, that will be returned when an ASAP event is triggered.
Select	Click to select a service action. If a service action is selected, the service action parameter in the **Parameter Name** will be returned only for the specific service action. If a service action is not selected and the parameter in the **Parameter Name** is a service action parameter, the service action parameter is returned in the event for each service action that has the parameter in the service model.
Return Data Set	Specify a description for the return data set.

Related Topics

Details Tab

Event Template Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the event template entity. This tab is read only.

Related Topics

Event Template Editor

5

Modeling Entities

When working with Activation Network cartridge projects, you develop implementations for network element connection handlers, and user defined exit types. Additionally, you can create custom action processors and configure retry properties and network element instances.

When modeling entities for Activation Network cartridge projects, see the following topics:

- Working with Java NE Connection Handlers
- Working with User-Defined Exit Types
- Working with Custom Action Processors
- Working with Network Element Instance Throughput Control
- NE Connection Handler Editor
- User Defined Exit Type Editor

Working with Java NE Connection Handlers

The NE Connection Handlers with Java implementation manage the connections with network elements based on the communication parameters in an NE Template.

When implementing Java NE Connection Handlers, see the following topics:

- About Java NE Connection Handlers
- Creating New NE Connection Handlers

About Java NE Connection Handlers

The Java implementation NE Connection Handler needs to implement the `IConnectionHandler` interface, which provides a common interface for interacting with connections and requires few methods to be written.

Different types of NE Connection Handlers can be created:

- Telnet: When you create a new telnet NE Connection Handler, it generates code for telnet connections. This extends the telnet connection to support the interface. The NE Connection Handler editor indicates where additional code is required.
- Custom: Create this NE Connection Handler if the connections are not telnet. Custom Connection Handlers generate a skeleton to implement the `IconnectionHandler` and extends the base NE connection class. The NE Connection Handler editor indicates where additional code is required.

Related Topics

Creating New NE Connection Handlers

Creating New NE Connection Handlers

To create a new NE Connection Handler entity:

1. From the **Studio** menu, select **New**, then select **Activation**, and then select **NE Connection Handler**.

   The NE Connection Handler Wizard appears.

2. Select the project for this element and enter a name for the entity.
3. (Optional) Select a location for the entity.

   By default, Design Studio saves the entity to your default workspace location. You can enter a folder name in the **Folder** field or select a location different from the system-provided default. To select a different location:

   a. Click the **Folder** field **Browse** button.

   b. Navigate to the directory in which to save the entity.

   c. Click **OK**.

4. Click **Finish** to create the NE Connection Handler.

Related Topics

About Java NE Connection Handlers

Working with User-Defined Exit Types

User-defined exit types are values that describe the manner in which ASAP atomic actions complete. You can create your own values to describe exit scenarios specific to your own cartridge solutions.

User defined exit types may be configured based on the base exit types and other attributes, such as service action, atomic action, vendor, technology software load, pattern, and so forth. See *ASAP Cartridge Development Guide* for more information.

See the following topics:

- Creating New User-Defined Exit Types
- Configuring User-Defined Exit Types

Creating New User-Defined Exit Types

To create a new user-defined exit type:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, then select **Activation**, and then select **User Defined Exit Type**.
3. Select the project for this element and enter a name for the entity.
4. (Optional) Select a location for the entity.

   By default, Design Studio saves the entity to your default workspace location. You can enter a folder name in the **Folder** field or select a location different from the system-provided default. To select a different location:

   a. Click the **Folder** field **Browse** button.
   b. Navigate to the directory in which to save the entity.
   c. Click **OK**.
5. Click **Finish** to create the user-defined exit type.

Related Topics

User Defined Exit Type Editor

Configuring User-Defined Exit Types

Working with User-Defined Exit Types

Configuring User-Defined Exit Types

To configure a user-defined exit type:

1. In the Studio Projects view, double-click a User-Defined Exit Type entity to open the User Defined Exit Type editor.
2. In the User Defined Exit Types area, click **Add**.

   This enables the fields in the User Defined Exit Types Detail area of the editor and populates those fields with default values.
3. In the **Pattern** field, enter a value.

   For example, enter SUCCESS, DENIED, RESOURCE BUSY, and so on.
4. Select the corresponding base exit type.
5. Enter the User Defined Exit Type for this pattern.

   For example, you might enter **AA1_SUCCESS**.
6. From the **File** menu, select **Save**.

Note:

Use the **Service Action** and **Atomic Action** fields when creating Activation Service cartridge projects.

Related Topics

User Defined Exit Type Editor

Working with User-Defined Exit Types

Working with Custom Action Processors

You can create custom action processors to perform actions outside of the scope of the action processor in the cartridge project. For example, a custom action processor may be necessary when data is required by a subsequent atomic action but is not provided by the upstream system. Generally, a custom action processor produces but does not consume data. Customer action processors generate data for use in subsequent spawning logic, for use in the generation of an API/MML command, or to query the switch for data required by upstream systems. Custom action processors typically do not communicate with network elements. Rather, they process data. For example, you might create a custom action processor to run an algorithm that encrypts data or that performs formatting of data that may not have been handled by the upstream system or by the cartridge action processor.

See "Creating Custom Action Processors" for more information.

Creating Custom Action Processors

To create a custom action processor:

1. Create a new atomic action that triggers the custom action processor.

   Include the parameters required for the atomic action.
2. Create a new action processor and link it to the new atomic action.

   Creating a new action processor involves some level of coding (either a state table or Java processor with code generation method).
3. Link the new atomic action into your service model wherever it is needed.

Related Topics

Working with Custom Action Processors

Creating Service Actions, Atomic Actions, and Action Processors

Working with Network Element Instance Throughput Control

Network element instance throughput control prevents network elements from becoming overloaded by controlling the volume of transactions that sent from ASAP. You can use a central throughput control mechanism to configure a specific throughput per unit of time for network element instances, which limits the number of transactions sent to the network element during that unit of time.

For example, consider that you have a network element (one that responds to ASAP asynchronously) that can handle a maximum of 20 transactions per second. And, if the number of transactions sent to this network element exceed 20 per second, some response messages are not generated and are not received by ASAP. You can configure throughput controls for this network element instance to prevent overloading and to ensure that the network element generates all required response messages.

See "Configuring Network Element Instance Throughput Control" for more information.

Configuring Network Element Instance Throughput Control

To configure the throughput control for a network element instance:

1. In the NE Template editor, modify the throughput properties used to create new network element instances.

   When modifying the properties used to create new network element instances, you ensure that any future network element instances use the appropriate throughput properties. To do this, update the throughput values in the NE Template editor as follows:

   a. In the **Throughput** field, enter the maximum number of transactions.

Valid **Throughput** field values range from 1 - 9999.

   b. In the **Transactions Per** field, enter the unit of time.

2. In the Network Element editor, modify the throughput properties for any existing network element instances of that type.

   Update the throughput values as follows:

   a. In the **Throughput** field, enter the maximum number of transactions.

      Valid **Throughput** field values range from 1 - 9999.

   b. In the **Transactions Per** field, enter the unit of time.

3. In the Dynamic NE Template editor, modify the throughput properties for any existing Dynamic NE Template used for network element instances of that type.

   Update the throughput values as follows:

   a. In the **Throughput** field, enter the maximum number of transactions.

      Valid **Throughput** field values range from 1 - 9999.

   b. In the **Transactions Per** field, enter the unit of time.

4. Save all modified network element templates, network elements, and dynamic network element templates.

   You can now deploy the configuration to an ASAP environment for testing.

Related Topics

NE Template Editor

Working with Network Element Instance Throughput Control

NE Connection Handler Editor

Use the NE Connection Handler editor to add or remove NE connection handlers. You can create a connection Handler class that manages the connection with an network element based on the communication parameters in an NE template. In the Studio Projects view, double-click an NE Connection Handler entity to open the NE Connection Handler editor.

See the following topics:

- NE Connection Handler Editor Editor Tab
- NE Connection Handler Editor Blueprint Tab

NE Connection Handler Editor Editor Tab

Use the **Editor** tab for defining the parameters for an NE Connection Handler. In the Connection Handler Detail area, you can define the class for the NE Connection Handler entity.

Field	Use
Description	Specify a description for the NE Connection Handler editor.

Field	Use
Connection Handler Type	Select any one of the following Connection Handler types from the list: • Java Connection Handler A Java class that contains the connection logic related to network element connection. The Java Connection Handler is recommended for use. • Login State Table Connection Handler A programming type related to state table. • Logoff State Table Connection Handler A programming type related to state table. • Generic Connection Handler A programming type which is neither related to Java class nor state table.
Vendor, Technology, and **Software Load**	In the Connection Handlers area, on clicking **Add**, displays the vendor, technology, and software load for the NE Connection Handler entity in the cartridge project.
Class	In the Connection Handlers area, displays the class you have selected or created in the Connection Handler Details area.
Add	Click to add a Connection Handler. As there are different ways of communicating like SOAP, Telnet, and so on, you can add or select a Connection Handler implementation for the Connection Handler.
Remove	Click to clear a Connection Handler from the editor.
Open	Click to open the code of the Connection Handler class. This button is enabled only when the code is available.
New	Click to create a connection class. The connection class contains the skeleton of the connection logic based on the connection type selected on the Studio Activation Java Connection Handler Wizard. **Note: New** is grayed out for Login State Table Connection Handler and Logoff State Table Connection Handler types.
Select	Click to select an existing class.

Related Topics

NE Connection Handler Editor

NE Connection Handler Editor Blueprint Tab

Working with Java NE Connection Handlers

NE Connection Handler Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the NE Connection Handler entity. This tab is read-only.

Related Topics

NE Connection Handler Editor

NE Connection Handler Editor Editor Tab

Working with Java NE Connection Handlers

User Defined Exit Type Editor

Use the User Defined Exit Type editor to add or remove user-defined exit types. In the Studio Projects view, double-click a user-defined entity to open the User Defined Exit Type editor.

See the following topics:

- User Defined Exit Type Editor Editor Tab
- User Defined Exit Type Editor Blueprint Tab

User Defined Exit Type Editor Editor Tab

Use the **Editor** tab for configuring the values of the user-defined exit types. In the User Defined Exit Type Detail area, you can configure the values for a specific user-defined exit type.

User Defined Exit Types

Field	Use
Description	Specify a description for the User Defined Exit Type editor.
Vendor, **Technology**, and **Software Load**	Displays the vendor, technology, and software load for the user-defined exit type entity in the cartridge project.
User Exit Type and **Base Exit Type**	Displays the values, of the **User Defined Exit Type** and **Base Exit Type** fields respectively, you specified in the User Defined Exit Type Detail area. **Note:** In the User Defined Exit Types area, initially the fields display the default values.
Add	Click to add a new user-defined exit type. The default values appear in the fields.
Remove	Click to clear a user-defined exit type from the editor.

User Defined Exit Type Detail

Field	Use
Pattern	Specify a regular expression to perform a pattern search on the responses from network elements. The regular expression will allow cartridge users to associate a series of responses to a user-defined exit type. For example, a regular expression "6." can identify a pattern where any response with the character "6" followed by any number of characters will translate to the user-defined exit type related to failure.
User Defined Exit Type	Specify a value that maps atomic action exit codes to one of the predefined base exit types. The cartridges map the return codes and status values from a network element to a user-defined exit type.
Base Exit Type	Select a value that determines the product behavior like success or failure.

Field	Use
Select	Click to select a service action or an atomic action. **Note:** You must select a service action or an atomic action while creating Service cartridges.
Open	Click to open the selected service action or atomic action.
Clear	Click to clear from the field the selected service action or atomic action.
Description	Specify a description for the specific user-defined exit type.

Related Topics

User Defined Exit Type Editor

Working with User-Defined Exit Types

User Defined Exit Type Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the user-defined exit type entity. This tab is read-only.

Related Topics

User Defined Exit Type Editor

Working with User-Defined Exit Types

6

Working with Network Elements

In Oracle Communications Design Studio, you create and configure the NE template, the network element, and the dynamic network template. These elements are related as they involve connections to equipment.

If you want to route atomic actions in a work order using Directory Number (DN), you must configure the DN routing details.

See the following topics:

- About Network Elements
- Configuring Network Element Models
- Working with Directory Number Routing
- DN Routing Map Editor
- Dynamic NE Template Editor
- NE Template Editor

About Network Elements

You create and configure the following network elements:

NE Template

NE templates are similar to network elements: they exist in projects, they have vendor, technology, and software loads, and so forth. However, you can set up network element templates so that they can be copied later to create one or many specific network elements.

Network Element

Network elements represent the information needed to connect to one specific piece of equipment on the network. Separate connection pools allow more than one connection to a piece of equipment, and for each connection you can set up a different connection pool. Pools have parameters that are used by connection handlers.

Dynamic NE Template

Dynamic NE templates represent an additional method for specifying how to connect to a piece of equipment on the network. However, in contrast to a network element (where one network element is created for each piece of equipment, and a template can be used to assist with creation of multiple network elements), one dynamic NE template is created for a vendor, technology, and software load (and not for a piece of equipment). When an order comes into the system, half of the connection information is in the dynamic NE template, the other half is in the order. Therefore, the connection pool is created at run time and is discarded when no longer needed. Consequently, you are not required to set up network elements individually. Instead, you set up only the profile and then enter the connection information on the order.

Related Topics

Configuring Network Element Models

Configuring Network Element Models

When configuring network element models:

1. Create an NE template that you can copy later to create a specific network element.

   See "Creating NE Templates".
2. Create a network element based on the NE template.

   See "Creating Network Elements based on an NE Template".
3. (Optional) If you are working with large network, create a dynamic NE template.

   See "Creating Dynamic NE Templates".

Creating NE Templates

To create NE templates:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, then select **Activation**, and then select **NE Template**.

   The **NE Template Wizard** appears.
3. Select the project and enter a name for the entity.
4. Click **Finish**.

   The NE Template editor appears.
5. In the **Connections** tab, click **Add**.

   The Add Predefined Parameters dialog box appears.
6. Click **Yes** to set up a different connection pool for each required connection.

   You can add the predefined Oracle Communications ASAP communication parameters as global parameters.

   In the **All Communication Parameters** tab, depending on the network element type (Serial Port Dial-up, for example), all parameters for the type are listed by default and are displayed as Global connections. You can leave them as global connections to use the value for a parameter across all connections, or you can override parameters (a port setting, for example) for a connection.
7. To override a parameter, select it in the Connection Parameter Details list and click **Make Local**.

   The parameter will then have the connection name substituted for Global in the list. For each connection, the network element first uses local parameters if available. If none are available, the global parameters are used.
8. In the **Target Network Elements** tab, create a target network element by copying the name of the network element into the **Target NE Name** field.

9. Select **File**, then select **Save**.

   The network element is now ready for users to connect to it with their pools.

   > **Note:**
   >
   > There is a direct link between connection handlers and network elements. When ASAP determines what network element it needs to configure (the one it is routing to), it checks the vendor, technology, and software load of the network element and then searches for a connection handler with the same vendor, technology, and software load.
   >
   > The parameters it sets up go into the connection handler, which gets called to establish the connection to the pools. When the connection is established, the connection handler determines which atomic action it is processing and then checks the implementation map for a matching vendor, technology, and software load to determine which action processor to use.

10. In the **Connection Pool Name** field, enter a name (the name must be unique on the ASAP server).

Related Topics

Configuring Network Element Models

Working with Network Elements

NE Template Editor

Creating Network Elements based on an NE Template

To create a network element based on an NE template:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, then select **Activation**, and then select **Network Element**.

   The Studio Model Entity wizard appears.
3. Select the project, enter a name for the entity, and select the NE template.
4. Click **Finish**.

   The Network Element editor appears. The pool and parameter descriptions are identical to those on the NE Template editor. See "NE Template Editor" for more information on using the Network Element editor.
5. In the **Connection Pool Name** field, enter a unique name (pool values must be unique across the ASAP server).
6. Navigate to the **Target Network Elements** tab.
7. Create a target network element by copying the name of the network element into the **Target NE Name** field.
8. Click **Save** to save the network element.

   The network element is now ready for users to connect to it with their pools.

Note:

There is a direct link between connection handlers and network elements. When ASAP determines what network element it needs to configure (the one it is routing to), it checks the vendor, technology, and software load of the network element and then searches for a connection handler with the same vendor, technology, and software load. The parameters it sets up go into the connection handler, which gets called to establish the connection to the pools. Once the connection is established, the connection handler determines which atomic action it is processing and then checks the implementation map for a matching vendor, technology, and software load to determine which action processor to use.

Related Topics

Configuring Network Element Models

Working with Network Elements

Creating Dynamic NE Templates

You can use dynamic NE templates when working with large networks and if you do not want to keep an inventory of all equipment. In this scenario, the inventory system acquires the routing connection data.

To create a dynamic NE template:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, then select **Activation**, and then select **Dynamic NE Template**.

   The Studio Model Entity wizard appears.
3. Select the project and enter a name for the entity.
4. Click **Finish**.

   The Dynamic NE Template editor appears. Only the global parameters are displayed in the **NE Instance Properties** list, as all connections have been created during runtime and a remote network element is not required. For example, if socket-based, you would add socket-based parameters only; any order that comes in with the same vendor, technology, and software load would get the global parameters from here and get the connection parameters from the order (a password or IP address, for example). A syntax on the order is set up for global parameters:

   ```
   COMM_PARAM.NE_ID.value
   ```
5. In the NE Instance Properties area, the following fields are listed:
   - **Drop Time Out (minutes)**: This field specifies the time in which a connection will drop in absence of activity, such as generation of new connection requests. You can change the time as per your requirement.

- **Maximum connections**: This field specifies the number of connections allowed by ASAP in a connection pool. You can change the number of connections as per your requirement.
- **Spawn Threshold (AAs)**: If there is a request for a new connection and the number of connections in a connection pool has reached a threshold, a new connection pool is created. This field specifies the threshold value after which a new connection pool is created.
- **Kill Threshold (AAs)**: If the number of connections in a connection pool goes below than the number of connections specified in the kill threshold, the connection pool is dropped.
- **Retry Count**: If a connection fails between ASAP and the network element, ASAP tries to establish the connection again. This field specifies the number of attempts that ASAP can do to reestablish the connection.
- **Retry Interval**: This field specifies the time interval between each retry attempt by ASAP. You can change the time interval as per your requirement.
- **Throughput**: This field specifies the time for network element instance to ensure that no more than specific number of transactions are sent to the network element per unit of time.

6. Click **Add** to add more global parameters.
7. Save the dynamic NE template.

Related Topics

Configuring Network Element Models

Working with Network Elements

Dynamic NE Template Editor

Working with Directory Number Routing

You can route atomic actions to a network element using the directory number.

See the following topics:

- About Directory Number Routing
- Creating Directory Number Routing
- Configuring Directory Number Routing

About Directory Number Routing

A directory number is a 10 digit telephone number which is divided into three parts:

- NPA: The first three digits of a telephone number known as Numbering Plan Area (NPA) code.
- NXX: The second three digits of a telephone number known as Central Office code is also known as prefix.
- Line: The last four digits of a telephone number.

See *ASAP System Administrator's Guide* for more information about using Design Studio to configure directory numbers on atomic actions in a cartridge project.

Related Topics

Creating Directory Number Routing

Configuring Directory Number Routing

DN Routing Map Editor

Creating Directory Number Routing

To create DN routing:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, then select **Activation**, and then select **DN Routing Map**.

   The DN Routing Map Wizard appears.
3. Select a project for this element and enter a name for the entity.
4. (Optional) Select a location for the entity.

   By default, Design Studio saves the entity to your default workspace location. You can deselect the **Use recommended name and location** check box and enter a folder name in the **Folder** field or select a location different from the system-provided default.

   To select a different location:

   a. Deselect the **Use recommended name and location** check box.
   b. Click the **Folder** field **Browse** button.
   c. Navigate to the directory in which to save the entity.
   d. Click **OK**.
5. Click **Finish**.

   In the Studio Projects view, in the project folder, the new DN routing map entity appears.

Related Topics

DN Routing Map Editor

Working with Directory Number Routing

Configuring Directory Number Routing

To configure DN routing:

1. In the Studio Projects view, double-click a DN routing map entity.

   The DN Routing Map editor appears.
2. In the **Description** field, specify the description for the editor.
3. In the DN Routing Details area, click **Add**.

   A new row with default values appears.
4. Click the row to edit the DN routing details.

This enables the fields in the Routing Map Details area for this specific row.

5. In the Routing Map Details area, for the specific row, specify the values for the **NPA, NXX, Min Line,** and **Max Line** fields.

   Note:

   The range for **NPA** and **NXX** is from 100 to 999 and for **Min Line** and **Max Line** is from 1000 to 9999.

6. (Optional) Click the **...** button and select an atomic action that you want to route using DN.
7. Click the **...** button and select a network element to which you want to route the atomic action.
8. Select **File**, then select **Save**.

Related Topics

DN Routing Map Editor

Working with Directory Number Routing

DN Routing Map Editor

Use the DN Routing Map editor to add or remove routing details to route atomic actions using directory numbers. In the Studio Projects view, double-click a directory number routing map entity to open the DN Routing Map editor.

See the following topics:

- DN Routing Map Editor Editor Tab
- DN Routing Map Editor Blueprint Tab

DN Routing Map Editor Editor Tab

Use the **Editor** tab for defining the parameters for routing an atomic action using DN. In the Routing Map Details area, you can configure the values for a DN routing map entity.

Field	Use
Description	Specify a description for the DN Routing Map editor.
Vendor, Technology, and **Software Load**	Displays the vendor, technology, and software load for the DN routing map entity in the cartridge project.
NPA, NXX, Min Line, Max Line, Atomic Action, and **Network Element ID**	Displays the values configured in the Routing Map Details area.
Add	Click to add DN routing details for an atomic action.
Remove	Click to clear DN routing details for an atomic action.

Routing Map Details

Field	Use
NPA	Specify a Numbering Plan Area (NPA) code. The allowed range is from 100 to 999.
NXX	Specify a Central Office code also known as prefix. The allowed range is from 100 to 999.
Min Line	Specify the lowest line number in the range. The allowed range is from 1000 to 9999.
Max Line	Specify the highest line number in the range. The allowed range is from 1000 to 9999.
Atomic Action	This field is optional. Select an atomic action which you want to route using DN. If no atomic action is selected, all atomic actions in the work order will be routed using DN.
Network Element ID	Select a network element to which you want to route the atomic action.

Related Topics

DN Routing Map Editor

Working with Directory Number Routing

DN Routing Map Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the DN routing map entity. This tab is read-only.

Related Topics

DN Routing Map Editor

Working with Directory Number Routing

Dynamic NE Template Editor

Use the Dynamic NE Template editor to define a dynamic NE template entity. Dynamic routing is the ability to route orders based on network and communication data provided as order parameters, rather than using preconfigured static, locally maintained data.

See the following topics:

- Dynamic NE Template Editor Editor Tab
- Dynamic NE Template Editor Blueprint Tab

Dynamic NE Template Editor Editor Tab

Use the **Editor** tab for defining the values required for connecting to a network element.

Field	Use
Description	Specify a description for the Dynamic NE Template editor.
Vendor, Technology, and **Software Load**	Displays the vendor, technology, and software load for the dynamic NE template entity in the cartridge project.
Drop Time Out (minutes)	Select the time in which a connection will drop in the absence of an activity.
Maximum Connections	Select the maximum number of concurrent connections allowed to the host network element.
Retry Count	Select the **Retry Count** check box to enable the **Retry Count** box. From the **Retry Count** box, select the number of attempts that ASAP can do to reestablish the connection to the network element.
Retry Interval	Select the **Retry Interval** check box to enable the **Retry Interval** box. From the **Retry Interval** box, select the time interval between each retry attempt by ASAP.
Spawn Threshold (AAs)	Select the number of atomic action requests destined to the network element. The number must exceed the spawn threshold value to open a new connection to the network element. As the number of atomic actions waiting to be routed to the network element continues to exceed spawn threshold, ASAP continues to establish new connections to the network element till maximum connections is reached. The spawn threshold value is measured in terms of atomic actions.
Kill Threshold (AAs)	Select the number of atomic action requests that ASAP must have for a specific network element for ASAP to disconnect one or more connections to the network element. **Note:** The kill threshold value should be lower than the spawn threshold value.
Throughput	Select the **Throughput** check box to enable the **Throughput** box. From the **Throughput** box, select the minimum amount of time a transaction takes to complete for each network element instance.
Transactions Per	Select the unit of time required for transactions. **Note:** If you want to select a value, select the **Throughput** check box.
Line Type	Select a connection type that the network element will support. **Note:** The value passed through the work order takes precedence.
Parameter Label, Value, and **Description**	In the Connection Parameter Details area, specify the values for the connection details. These values are global parameters. For example, user ID and password of a Telnet session. **Note:** Ensure that the same label names and values are used in the NE connection class.
Add	Click to add global parameters.
Remove	Click to clear the global parameters from the editor.

Related Topics

Dynamic NE Template Editor

Working with Network Elements

Dynamic NE Template Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the dynamic NE template entity. This tab is read-only.

Related Topics

Dynamic NE Template Editor

Working with Network Elements

NE Template Editor

Use the NE Template editor to define an NE template entity. You can create a connection pool and add communication parameters used to manage the connections to a network element.

When working with the NE Template editor, see the following topics:

- NE Template Editor Editor Tab
- NE Template Editor Blueprint Tab

NE Template Editor Editor Tab

Use the **Editor** tab to define configuration values used to manage the connections to a network element.

Field	Use
Description	Specify a description for the NE Template editor.
Vendor, Technology, and **Software Load**	Displays the vendor, technology, and software load for the NE template entity in the cartridge project.

See the following topics:

- General Tab
- Connections Tab
- All Communication Parameters Tab
- Target Network Elements Tab

General Tab

Use the **General** tab to define values for a connection pool.

Field	Use
Connection Pool Name	Specify a unique eight-lettered connection pool name. Any connection to the network element is borrowed from this connection pool.

Field	Use
Spawn Threshold (AAs)	Select the maximum number of atomic action requests that can be queued to be sent to the network element in ASAP at a given time. As the number of atomic actions waiting to be routed to the network element continues to exceed spawn threshold, ASAP continues to establish new connections to the network element till maximum connections is reached. See *ASAP Developer's Guide*. The spawn threshold value is measured in terms of atomic actions. The spawn threshold value must be above the kill threshold value, if multiple connections are required to a specific network element.
Retry Count	Select the **Retry Count** check box to enable the **Retry Count** box. From the **Retry Count** box, select the number of attempts that ASAP perform to reestablish the connection to the network element.
Retry Interval	Select the **Retry Interval** check box to enable the **Retry Interval** box. From the **Retry Interval** box, select the time interval between each retry attempt by ASAP.
Protocol	Select a connection type that the network element will support.
Maximum Connections	Select the maximum number of concurrent connections allowed to the host network element.
Throughput	Select the **Throughput** check box to enable the **Throughput** box. From the **Throughput** box, select the minimum amount of time a transaction takes to complete for each network element instance.
Transactions Per	Select the unit of time required for transactions. **Note:** If you want to select a value, select the **Throughput** check box.
Drop Time Out (minutes)	Select the time in which a connection will drop in the absence of an activity.
Kill Threshold (AAs)	Select the maximum number of atomic action requests that must be queued in ASAP at a given time for a specific network element, for ASAP to disconnect any auxiliary connection to the network element. See *ASAP Developer's Guide*. **Note:** The kill threshold value should be lower than the spawn threshold value.

Related Topics

Connections Tab

All Communication Parameters Tab

Target Network Elements Tab

Connections Tab

Use the **Connections** tab to add connections to the connection pool, add predefined communication parameters, and if required override them with local parameters. The local parameters that appear in the Connection Parameter Details area are local to the connection selected in the NE Instance Properties area in the **Connections** tab. Every connection in the connection pool can have parameters local to just one specific connection and can also have parameters common to all the connections in the connection pool termed as global parameters.

NE Instance Properties

Field	Use
Connection Name	Specify a name to the connection in the connection pool.
Protocol	Displays the protocol selected on the **General** tab.
ASAP System Setting	Select to display whether an ASAP environment is for development or production.
Add	Click to add a connection in the connection pool.
Remove	Click to clear a connection from the connection pool.
Copy	Click to create a copy of a specific connection but with a unique name.

The global and local communication parameters appear in the Connection Parameter Details area. The global parameters are common across all the connections in a pool and so are editable in the **All Communication Parameters** tab. See "All Communication Parameters Tab" for more information.

Connection Parameter Details

Note:

You can double-click and edit only the local communication parameters as they are local to a connection.

Field	Use
Parameter Label	Double-click to specify a parameter name.
Connection	Displays the connection name selected in the NE Instance Properties area.
Value	Double-click to specify a value.
Description	Double-click to specify a description.
Add Local	Click to add a new parameter with the connection name as displayed in the row highlighted in the NE Instance Properties area.
Remove Local	Click to clear the parameter from the editor.
Make Local Copy	Click to create a parameter which is a copy of the global communication parameter.

Related Topics

General Tab

All Communication Parameters Tab

Target Network Elements Tab

All Communication Parameters Tab

Use the **All Communication Parameters** tab to define the global communication parameters. The global communication parameters are common to all the connections in a connection pool.

The local communication parameters appear in this tab but are not editable. These are the same as can be seen in the **Connections** tab for a specific connection.

Note:

You can double-click and edit only the global communication parameters.

Field	Use
Parameter Label	Displays the name of the communication parameter. You can double-click to rename the parameter label name.
Connection	Displays the connection as global or local. If the parameter is local, the connection name of the connection to which the parameter belongs appears.
Value	Double-click to specify a value to the global communication parameter.
Description	Double-click to specify a description to the global communication parameter.
Add Global	Click to add a parameter as global.
Remove Global	Click to clear a parameter from the editor.

Related Topics

General Tab

Connections Tab

Target Network Elements Tab

Target Network Elements Tab

Use the **Target Network Elements** tab to define the target network elements to which you can route atomic actions.

Field	Use
Target Network Element, Atomic Action, and **Description**	Displays the values configured in the Target NE Details area.
Add	Click to add a new target network element.
Remove	Click to clear a target network element from the editor.
Target NE Name	Specify the name of a target network element to which you can route an atomic action.

Field	Use
Select	Click to select an atomic action to be routed through the target network element. Do not select a specific atomic action, if you want all the atomic actions to be routed to one network element.
Clear	Click to clear the atomic action for a specific target network element.
Description	Specify a description for the target network element.

Related Topics

General Tab

Connections Tab

All Communication Parameters Tab

NE Template Editor Blueprint Tab

Use the **Blueprint** tab to view the generated documentation for the NE Template entity. This tab is read-only.

Related Topics

NE Template Editor

Working with Network Elements

7

Packaging and Deploying Activation Cartridges

To deploy Activation cartridges to the Oracle Communications ASAP environment, do the following tasks:

1. Determine the elements to include in the deployable SAR file.

   See "Packaging Projects" for more information.

2. Create a Studio Environment project.

   See "Creating Environment Projects" for more information.

3. Create an entity to define the run-time environment connection parameters.

   See "Creating Run-Time Environments" for more information.

4. Deploy and manage cartridges in the ASAP environment by adding and removing cartridges for deployment and deploying and undeploying cartridges.

   See "Deploying Cartridge Projects" for more information.

5. Map network element processors by creating and configuring NEP Map entities.

   See "Mapping Network Element Processors" for more information.

6. Configure Cartridge Management variables to restart ASAP after cartridge deploy.

   See "Configuring ASAP Servers to Restart After Cartridge Deploy" for more information.

Mapping Network Element Processors

To map network elements (NEs) to network element processors (NEPs), you create a new NEP Map entity and configure the entity using the NEP Map editor.

Note:

NEs are packaged with cartridges but are deployed and managed separately.

See the following topics:

- Creating New NEP Map Entities
- Configuring NEP Maps

Creating New NEP Map Entities

To create a new NEP Map entity:

1. Create a Studio Environment project.

   See "Creating Environment Projects" for more information.

2. In the Studio Projects view, right-click and select **New**, select **Environment**, then select **NEP Map**.

   The NEP Map Wizard appears.

3. Select a Studio Environment project from the list.

4. Select an environment from the Studio Environment list.

   The Studio Environment list contains all of the **.sceEnvironment** objects in the workspace. By associating the NEP Map entity with the selected Studio environment, the entity can obtain from the environment the ASAP JMX server:port information and the **ENV_ID**, among other properties.

5. Specify an entity name.

   The system applies a default entity name prefix of **M_**.

6. (Optional) Select a location for the entity.

   By default, Design Studio saves the entity to your default workspace location. You can enter a folder name in the **Folder** field or select a location different from the system-provided default. To select a different location:

   a. Click the **Folder** field **Browse** button.

   b. Navigate to the directory in which to save the entity.

   c. Click **OK**.

7. Click **Finish** to create the entity in the specified location of the project.

   The system creates a new **.nepMap** object and opens the new entity in the NEP Map editor.

Related Topics

Configuring NEP Maps

NEP Map Editor

Configuring NEP Maps

You configure NEP maps using the NEP Map editor, which displays a list of all network elements that you have added. After connecting to the environment, you can select a default NEP from the available list for the environment to which the elements will be sent.

To retrieve NEP server names:

1. Click **Connect** to connect to your ASAP environment using your WebLogic Server user name and password.

> **Note:**
>
> To connect to your ASAP environment, you must define your connection settings. See "Studio Environment Editor Activation Connection Details Area" for more information. The NEP Map editor retrieves all NEP server names and adds them to the Default NEP list.

2. From the Default NEP list, select an NEP.
3. Click **Refresh** to retrieve new NEP server names from ASAP that you added while connected to the ASAP system.

> **Note:**
>
> Disconnecting and reconnecting also refreshes the NEP list. After you retrieve the NEP list you can disconnect from ASAP and configure the NEP map in Design Studio. However, if you intend to deploy or undeploy network elements after configuring, do not disconnect from ASAP.

To map network elements:

1. In the Network Element Processor Map grid, select a network element.
2. In the Mapping Detail area, select a value from the **NEP Server** list.

   Your selection determines the value that displays in the NEP column in the Network Element Processor Map grid.
3. Select **File**, then select **Save**.
4. Select the element and click **Deploy**.

> **Note:**
>
> You must define the **ENV_ID** and **ASAP_VERSION** properties for the ASAP JMX service in the Studio Environment editor. These properties are required for the NEP Map entity to generate JMX-required JNDI context strings. See "Studio Environment Editor Activation Connection Details Area" for more information.
>
> You can also optionally enable the RESTART_ASAP_SERVERS variable in the Studio Environment editor. Enabling this variable automatically restarts the ASAP servers when you deploy a cartridge. See "Configuring ASAP Servers to Restart After Cartridge Deploy" for more information.

5. Do any one of the following (if you have not enabled the RESTART_ASAP_SERVERS variable):
   - Restart ASAP.
   - Restart the NEP server to which the network element is mapped.
   - Execute the following command:

```
asap_utils -option 113
```

Related Topics

Mapping Network Element Processors

NEP Map Editor

Configuring ASAP Servers to Restart After Cartridge Deploy

Use the **RESTART_ASAP_SERVERS** variable, in the **Cartridge Management Variables** tab on the Studio Environment editor, to enable ASAP servers to automatically stop and restart after deploying a cartridge.

To enable the **RESTART_ASAP_SERVERS** variable:

1. From the Studio Environment Editor, select the **Cartridge Management Variables** tab.
2. Select the **RESTART_ASAP_SERVERS** variable from the Cartridge Management Variables list.
3. In the Environment Cartridge Management Variable Details area, click **Override**.
4. In the **Override** field, enter **true**.

Note:

When this attribute is enabled, the ASAP servers restart after deploying an ASAP cartridge. This also means that you cannot deploy additional cartridges until the ASAP servers have restarted. Attempting to deploy an ASAP cartridge too quickly after deploying the initial cartridge will result in a deployment failure message.

Related Topics

Studio Environment Editor

Studio Environment Editor Activation Connection Details Area

Use the Connection Details area, in the **Connection Information** tab on the Studio Environment editor, to provide details to connect to ASAP. See "Studio Environment Editor" for more information.

Activation Connection Details

Field	Use
Environment ID	Specify the ASAP environment ID, of an ASAP instance, specified during ASAP installation.
Activation Version	Select an ASAP version to which you will connect.

Field	Use
Server Address	Specify the protocol and IP address or the host name of the computer on which the Oracle WebLogic Server is installed. You can use the http, https, t3, or t3s protocols. For t3s and https, you must also specify a keystore in the SSL tab. For example: • http://*host* • https://*host* • t3://*host* • t3s//*host* where *host* is the host name or the IP address of the computer on which the Oracle WebLogic Server is installed. If ASAP is installed on the administration server, use the IP address or the host name of the administration server. If ASAP is installed on a managed server, use the IP address or the host name of the managed server.
Server Port Number	Specify the port number of the computer on which the WebLogic Server is installed. If ASAP is installed on the administration server, use the port of the administration server. If ASAP is installed on a managed server, use the port of the managed server.
JNDI Context	Displays the JNDI context that appears based on the selected Activation version. WebLogic Server uses JNDI context and the queues mentioned in this tab to communicate to ASAP.
Order Submission Queue	Displays the name of the queue in the WebLogic Server where the orders are submitted to ASAP.
Order Event Queue	Displays the name of the queue in the WebLogic Server where events from ASAP are received.
Order Response Queue	Displays the name of the queue in the WebLogic Server where a work order response is received.

Related Topics

Configuring ASAP Servers to Restart After Cartridge Deploy

NEP Map Editor

Use the NEP Map editor to map network elements to a NEP and deploy the network elements.

Field	Use
Description	Specify a description for the NEP Map editor.
Default NEP	Select an NEP as default from the available list of NEPs in the ASAP environment.
Refresh	Click to retrieve a fresh list of NEP server names from the ASAP environment.
Connect	Click to connect to an ASAP environment using WebLogic Server user name and password.
Environment	Displays the name of the Studio environment selected on the NEP Map Wizard.

Field	Use
Add	Click to add an network element entity to the Network Element Processor Map grid.
Remove	Click to remove an network element entity from the Network Element Processor Map grid.
Deploy	Click to deploy a specific network element to the ASAP environment.
Deploy All	Click to deploy all the network elements on the NEP Map editor to the ASAP environment.
Undeploy	Click to undeploy a specific network element from the ASAP environment.
Undeploy All	Click to undeploy all the network elements from the ASAP environment.
Network Element and Cartridge	Displays the network element entity name and the cartridge name to which the network element belongs.
NEP Server	Select a NEP server for a specific network element on the Network Element Processor Map grid.

Related Topics

Mapping Network Element Processors

8

Testing ASAP Cartridges in Design Studio

An Activation test case (a test work order) enables you to test, in Oracle Communications Design Studio, the activation order completion for a cartridge project to verify that a work order is sent to the Oracle Communications ASAP environment. Consider the following when creating and running test cases:

- Each test case can have multiple service actions.
- It is possible to run multiple tests that are almost identical except for different parameters. Design Studio runs all of the cases in sequence.
- Test cases use OSSJ interface.

To test ASAP cartridges in Design Studio, you create an activation test case, then you run the test case.

Note:

Do not submit an activation test case over an SSL connection.

See the following topics:

- Creating Activation Test Cases
- Running Activation Test Cases
- Activation Test Case Editor

Creating Activation Test Cases

To create an activation test case:

1. From the **Studio** menu, select **Show Design Perspective**.
2. From the **Studio** menu, select **New**, then select **Activation**, and then select **Activation Test Case**.

   The Studio Model Entity wizard appears with the project name selected by default.
3. Enter a name for the activation test case.
4. (Optional) Select a location for the entity.

   Design Studio saves the entity to your default workspace location. You can enter a folder name in the **Folder** field or select a location different from the system-provided default. To select a different location:

   a. Click the **Folder** field **Browse** button.

   b. Navigate to the directory in which to save the entity.

   c. Click **OK**.

5. Click **Finish**.

   In the Studio Projects view, the new Activation Test Case entity appears under your project folder.

6. Double-click the Activation Test Case entity to display the Activation Test Case editor.

7. Click the **Service Actions** tab.

8. In the Test Execution area, do the following:

   - In the **Test Order Primary Key Pattern** field, do the following:
     - To identify the test case with an auto-generated integer, enter **0**.

       See "About Test Case Configuration" for more information.
     - To identify the test case with the name of the test appended with a random, auto-generated, integer, enter **1**.
   - In the **Timeout (seconds)** field, enter the number of seconds for a work order to process before it is dropped from the work order processing queue.
   - From the Order Completion Status list, set the notification for a work order that notifies you whether the work order was completed or failed.
   - From the Environment list, select the activation environment for a work order in which it will get processed.

9. In the Service Actions area, click **Add** to open the Service Action Selection dialog box.

10. On the Service Action Selection dialog box, you can do any one of the following:

    - Select a service action for testing. Do any one of the following and repeat for additional service actions:
      - To view all available service actions, enter an asterisk into the search field.
      - To filter for specific service actions, enter any character or string of characters contained in the service action name to display only the service actions containing those characters.
      - Select the service action you want for the test case and click **OK**.

        The service action name and description appear in the editor.
    - Create a service action for testing. Do the following:
      a. Click **New** to create a service action entity for testing.

         The Service Action Wizard appears.

      b. Enter an action or select a previously defined action from the list (for example, ADD, MOD, DEL, or QUERY).

      c. Enter a name for the entity (for example, SUBSCRIBER, GSM-SUBSCRIBER, ROUTE, TRUNK, or LINE).

      d. (Optional) Deselect **Use recommended name and location** to manually edit the name of the entity and browse for a location.

      e. Click **Finish**.

         In the Studio Projects view, the new service action entity appears in the **Service Actions** folder.

11. Select a service action in the Service Actions area to populate the Service Actions Parameters area with associated data.

    If there is a service action parameter of type XML, then click the **XML Value** button to specify the **.xml** file associated with the parameter. See "Using XML Value in Service Action" for more information.

12. Click **Add** to enable addition of custom parameters, or select specific parameters and click **Remove** to remove them.
13. (Optional) For a service action parameter of type XML, click the **XML Value** button to specify the **.xml** file associated with the parameter.
14. Select the **Order Data** tab of the Activation Test Case editor.
15. Click **Add** in the Global Parameters area to enable addition of a global parameter.

    Enter the parameter name and value. Repeat this for any additional global parameters you want to add.

    Note:

    A global parameter's value equals identical values of several service action parameters in the work order. For example, if several parameters listed in the **Service Actions** tab have the value **Toronto**, you can represent these by a global parameter, eliminating the need to enter a value for each separately.

16. In the Extended Work Order Properties area, click **Add** to enable addition of an extended work order property.

    Enter the property name and value. Repeat this for any additional extended work order properties you want to add.

17. Save your test case.

    You are now ready to set up and run your activation test case.

Related Topics

Running Activation Test Cases

Activation Test Case Editor

Using XML Value in Service Action

To use the XML value in a service action that has the XML value parameter:

1. On the Activation Test Case editor, in the Service Actions area, add service actions.

   See "Creating Activation Test Cases" for more information.

2. In the Service Actions area, click a service action.

   In the Service Action Parameters area, the service action parameters appear.

3. Click the row which has **Type** as XML.

   The **XML Value** button is enabled.

> **Note:**
>
> The **XML Value** button is enabled only for an XML type.

4. Create an **.xml** file.
5. In the Package Explorer view, add the **.xml** file under the **model** folder in the current cartridge project.
6. Select **Project**, then select **Clean**.
7. In the Service Action Parameters area, click the row which has an XML type.
8. Click the **XML Value** button.

   The XML Parameter Type Source dialog box appears.
9. Select the **.xml** file which contains the appropriate parameter values.
10. Click **OK**.

    In the Service Action Parameters area, the path of the **.xml** file appears in the **Value** column.

Running Activation Test Cases

After you have created an activation test case (test work order), you can run it in different environments. The purpose is to test, in Design Studio, the activation order completion for a cartridge project to verify that a work order is sent to the ASAP environment.

You can run test cases for your project in 2 different ways:

- From the Activation Test Case editor

  You can run a single test case of your project in a selected environment.
- From the Activation Project editor

  You can run a single test case or multiple test cases of your project at the same time in a selected environment.

See the following topics:

- About Test Case Configuration
- Running Test Cases from the Activation Test Case Editor
- Running Test Cases from the Project Editor

About Test Case Configuration

Every time you run a test case, a random, unique integer is generated (for example, 770250909). If in the Test Execution section of the Activation Test Case editor you leave the **Primary Key Pattern** field blank or enter **{0}**, the generated integer is used as primary key to identify the test case. If you enter **{1}** as the pattern, the test case name will be used as primary key (for example, TESTCASE001).

If you enter **{1}-{0}** in the **Primary Key Pattern** field, the primary key be the name and generated integer concatenate (for example, TESTCASE001-770250909). You can concatenate other integers or letters (for example, a user name) with the basic patterns to build specific patterns for creation of primary keys. The following table shows some examples of patterns you could use for TESTCASE001 (and its generated integer) to create various primary keys.

Pattern	Generated integer	Primary Key
(blank)	3782695	3782695
{0}	3782695	3782695
{1}	3782695	TESTCASE001
{1}-{0}	3782695	TESTCASE001-3782695
USER	3782695	USER
USER-{0}	3782695	USER-3782695
{1}-USER-{0}	3782695	TESTCASE001-USER-3782695

Related Topics

Running Activation Test Cases

Creating Activation Test Cases

Testing ASAP Cartridges in Design Studio

Running Test Cases from the Activation Test Case Editor

To run a test case from the Activation Test Case editor:

1. In the Test Execution area of the Activation Test Case editor, specify the following:
   - The **Test Order Primary Key Pattern** (for primary key).
   - The desired **Timeout** value for the test (default is 30 seconds)
   - The **Order Completion Status** you expect based on the parameters used (either **orderCompleteEvent** or **orderFailEvent**).

     The activation order passes the test if it meets the expected result. For example, if the expected result for the order is to fail but it completes instead, then the order has failed the test.
   - The **Environment** in which you want to run your test.
2. Click **Run** to run the test.

   A test status of PASS or FAIL appears in the Console view. Additionally, information will appear for problems encountered when running the test. If no problems are encountered and the order has passed, then Design Studio submits the work order to the ASAP environment.

Related Topics

Running Activation Test Cases

Creating Activation Test Cases

Testing ASAP Cartridges in Design Studio

Running Test Cases from the Project Editor

To run test cases from the Project editor:

1. In the Activation Project editor, click the **Testing** tab.

   All test cases you created for the project are displayed and are ready to be run at the same time.

   Alternatively, you could prepare to run one or multiple test cases by deselecting the **Include all from Project** check box, clicking **Select**, and then selecting one or more specific test cases from a selection dialog box.

2. From the Environment list, select the environment in which you want to run your tests.

3. Do any one of the following:

   - Click **Run All** to run all test cases from your project simultaneously.
   - Click **Run** to select only one test case from the list.

   A test status of PASS or FAIL appears in the Console view. Additionally, information will appear for problems encountered when running the test. If no problems are encountered and the order has passed, then Design Studio submits the work order to the ASAP environment.

Note:

When selecting **Run All** to run all test cases at once, you have two options for displaying the test results:

- Option 1: Display the results for each test case in a separate console (by leaving the **Separate Console for each Test Case** check box checked in the Project editor). You can access a specific console by clicking the down-arrow beside the **Display Selected Console** icon. This displays a list of all available consoles currently on the system, including the consoles for each test case, and enables you to view the results for any each case. For example, if you are viewing results for Test007 and want to view and compare the results for Testcase_Check, then simply click the down-arrow and select Testcase_Check from the list. The results for the selected test case will appear in a separate console.
- Option 2: Display the results for all test cases in one console (by deselecting the **Separate Console for each Test Case** check box in the Project editor). The results for all test cases will appear in one console.

Note:

For additional information on consoles and associated icons, refer to the Eclipse online help.

Related Topics

Running Activation Test Cases

Creating Activation Test Cases

Activation Project Editor

Activation Test Case Editor

Use the Activation Test Case editor to test, within Design Studio, the activation work order completion for a cartridge project to verify that the work order is sent to the ASAP environment. In the Studio Projects view, double-click an activation test case entity to open the Activation Test Case editor.

See the following topics:

- Activation Test Case Editor Service Actions Tab
- Activation Test Case Editor Order Data Tab

Field	Use
Description	Specify a description for the Activation Test Case editor.
Test Order Primary Key Pattern	Specify a pattern for the primary key that identifies a test case on ASAP server. See "About Test Case Configuration" for more information.
Timeout (seconds)	Specify the time, in seconds, for a work order to process. Beyond the specified time, the work order is dropped from the work order processing queue.
Order Completion Status	Select a notification for a work order that is sent to an ASAP user on work order completion or failure.
Environment	Select an environment for a work order to get processed.
Run	Click to execute the test case.

Activation Test Case Editor Service Actions Tab

Use the **Service Actions** tab to define service actions and their associated parameters for the test case.

Field	Use
Add	In the Service Actions area, click to add a service action to the editor.
Remove	In the Service Actions area, click to remove a service action from the editor.
Open	In the Service Actions area, click to open the service action editor for the selected service action.
XML Value	Click to specify the XML file associated with the service action parameter of XML type.
Add	In the Service Action Parameters area, click to add additional parameters for a specific service action in the Service Actions area.
Remove	In the Service Action Parameters area, click to remove service action parameters for a specific service action from the editor.

Related Topics

Activation Test Case Editor

Creating Activation Test Cases

Running Activation Test Cases

Activation Test Case Editor Order Data Tab

Use the **Order Data** tab to define global parameters and extended work order properties for the work orders that will be tested using the test case.

Field	Use
Add	In the Global Parameters area, click to add a global parameter. You can use a global parameter in place of identical values of service action parameters in the work order. See "Creating Activation Test Cases" for more information. In the Extended Work Order Properties area, click to add a property that needs to be enabled in ASAP. See *ASAP System Administrator's Guide* and *ASAP Developer's Guide*.
Remove	In the Global Parameters area, click to remove a global parameter. In the Extended Work Order Properties area, click to remove an extended work order property.

Related Topics

Activation Test Case Editor

Creating Activation Test Cases

Running Activation Test Cases

9
Documenting Cartridges

You can use cartridge guides to document the cartridge projects that you create in Oracle Communications Design Studio. The guides contain overview and technical information to assist with extending and integrating the cartridge project into a customer environment.

See the following topics:

- About Cartridge Documentation Guides
- Generating a Network Cartridge Guide

About Cartridge Documentation Guides

The cartridge guides are delivered in PDF format and are based on a template. The topics in the guides include cartridge installation and testing, atomic action and service action commands, network element templates, and user defined exit types.

Design Studio provides a cartridge guide generation feature that simplifies this documentation process. The feature becomes available whenever you create an Activation Network Cartridge project.

The cartridge generation feature creates a cover, table of contents, chapters, sections, headings, standard text and variables. Also, the feature creates most of the cartridge documentation in the appropriate area of the template. Developers complete the guide by adding variables and placeholders to subsections (for example, for installation and testing).

The four main subtopics generated by the Design Studio Cartridge Guide feature are:

- Cartridge Overview
- Atomic Service Description Layer (ASDL) Commands
- Service Definitions
- Configuring ASAP to Support Additional NE Instances

Note:

The Cartridge Guide template is created as a starting point for documentation when creating an Activation Network Cartridge project, but can be replaced with another file if desired.

Related Topics

Generating a Network Cartridge Guide

Generating a Network Cartridge Guide

When you create an Activation Network Cartridge project, Design Studio adds a Documentation group entity in the new project, which you can view in the Studio Projects view. After you build the cartridge project, the feature enables you to generate most of the required cartridge documentation.

> **Note:**
>
> The Cartridge Guide template is created as a starting point for Activation Network Cartridge project documentation; you can, however, replace the template with a different file.

To generate a cartridge guide:

1. In the Studio Projects view, expand the contents of the **Documentation** group.

   The **Cartridge Guide** file and **Templates** folder appear.
2. Double-click the **Cartridge Guide** file.

   The standard template for creating cartridge guides opens in MS Word as an RTF file.
3. Scroll down the cartridge guide template until you reach the Cartridge Model section with the text *Paste Model Documentation Here*.
4. Right-click on the cartridge project and select **Copy Documentation to Clipboard** from the context menu.
5. In the Cartridge Guide template's Cartridge Model section, highlight **Paste Model Documentation Here**.
6. Right-click and select **Paste** from the context menu.

   The Design Studio-generated documentation for the cartridge now appears below the Cartridge Model heading.

Related Topics

Editing Topic Overviews in the Cartridge Guide

About Cartridge Documentation Guides

Editing Topic Overviews in the Cartridge Guide

You can edit the overview text for any of the four generated documentation topics by making changes to the appropriate overview template file. Consider the following example, which demonstrates how to change the overview paragraph below the Atomic Actions heading:

To edit the Atomic Action topic overview section:

1. In the Studio Projects view, expand the contents of the **Templates** folder.

   Several files appear, each containing overview text for the indicated topic.

2. Double-click the **Atomic Action Overview** file to display its content in the text editor.
3. Edit the overview text as needed.

   When you have completed the updates, right-click in the editor and select **Save** from the context menu to save your changes.

Related Topics

Generating a Network Cartridge Guide

About Cartridge Documentation Guides

10
Working with Design Studio for IP Service Activator

You use Oracle Communications Design Studio to generate fully-formed service actions for Oracle Communications IP Service Activator from CTM templates.

See the following topics:

- About CTM Templates
- Creating an Activation IP Service Activator Project
- Importing CTM Templates into Design Studio
- IP Service Activator Atomic Action Editor
- CTM Template Editor

About CTM Templates

CTM templates define service actions. You can import the CTM template into Design Studio or you can load the CTM template into the IP Service Activator CTM server.

A CTM template is a valid XML file. See *IP Service Activator Concepts* for more information.

Import the CTM template into Design Studio if you want to use it as part of your IP Service Activator flow-through. Design Studio generates a service action when the template is imported, which you can then add to Activation Tasks. Each CTM template contains one service action.

Load the CTM template to the CTM Server if you want to invoke it from the IP Service Activator UI.

For more information about creating CTM templates or invoking them from the IP Service Activator UI, see *IP Service Activator Concepts* and *IP Service Activator System Administrator's Guide*.

Before you can import a CTM template into Design Studio, you must already have an activation IP Service Activator project.

Related Topics

Creating an Activation IP Service Activator Project

Importing CTM Templates into Design Studio

Working with Activation Tasks

Creating an Activation IP Service Activator Project

You must create an Activation IP Service Activator project in Design Studio before you can import CTM templates.

To create an Activation IP Service Activator project:

1. Switch to the Studio Projects view.
2. From the **Studio** menu, select **New**, then **Project**, then **Activation IPSA Project**.

   The Activation IPSA Cartridge Project wizard appears.
3. Do the following:
   a. In the **Project** name field, enter a name for your project.
   b. (Optional) Deselect **Use default location** and specify a location to save your project. By default, Design Studio saves the project to your default workspace.
   c. (Optional) In the **Package** field, enter the package name.

   Note:

   There is no need to modify the Java settings for activation IP Service Activator projects.
4. Click **Finish**.

   The activation IP Service Activator project is displayed in the Studio Projects view. You can now import CTM templates into Design Studio.

Related Topics

About CTM Templates

Importing CTM Templates into Design Studio

Importing CTM Templates into Design Studio

You import CTM templates into Design Studio if you want to use the generated service actions in your activation tasks for IP Service Activator.

This procedure requires an activation IP Service Activator project in Design Studio and assumes you already have a valid CTM template file.

To import a CTM template into Design Studio:

1. Create a CTM template.

   For more information about creating CTM templates or invoking them from the IP Service Activator UI, see *IP Service Activator Concepts* and *IP Service Activator System Administrator's Guide*.
2. In Design Studio, create an Activation IP Service Activator project.

   See "Creating an Activation IP Service Activator Project" for more information.
3. Switch to the Studio Projects view.

4. Right-click in the Studio Projects view.
5. From the context menu, click **Import** and select **IPSA CTM Template**.

   The IPSA CTM Template Import Wizard dialog box appears.
6. Do all the following:
   - From the **Project** list, specify into which activation IP Service Activator project you want to import the CTM template.
   - Click the **Browse** option that is next to the **CTM Template** field.

     The Select CTM Template XML dialog box appears.
   - Navigate to the CTM template file and click **OK**.
7. Click **Finish**.

   The IPSA CTM Template Import Wizard generates the following entities in the specified activation IP Service Activator project:
   - atomic action
   - CTM template
   - service action

   These entities are fully modeled and cannot be modified in Design Studio. The Design Studio editors for these entities are read only.
8. Add the activation IP Service Activator project as a dependency to an Order and Service Management cartridge project.

   You add the dependency to use the generated service actions in an activation task.

Related Topics

Working with Activation Tasks

About CTM Templates

IP Service Activator Atomic Action Editor

Service Action Editor

CTM Template Editor

IP Service Activator Atomic Action Editor

You use the IP Service Activator Atomic Action editor to review action parameters and definitions that are generated by Design Studio from CTM templates.

Note:

See "Atomic Action Editor" for information about modeling activation atomic actions and for a description of the Atomic Action editor subtabs and fields.

CTM Template Editor

Use the CTM Template editor **Blueprint** tab to view the generated documentation for the CTM template entity.